



OPERATIVE PROCEDURE

O P E R A T I V E P R O C E D U R E

This book was first published in the United States of America, where it has proved of great service to surgeons and medical students alike

The few copies which reached this country were so warmly welcomed that the publishers decided to print a British edition of the book

Text and illustrations remain identical with those in the original American edition

Johnson & Johnson
(GREAT BRITAIN) LIMITED

Slough Bucks England

1944

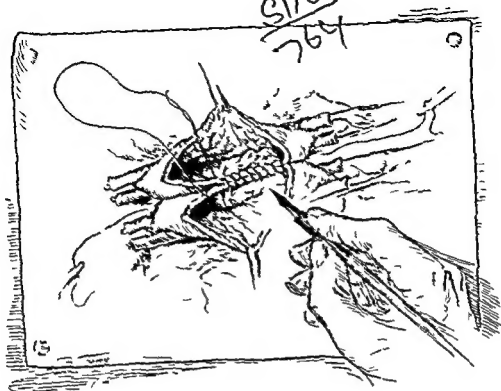
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1939

JOHNSON & JOHNSON

Printed and made in England at the Farnham Press London

5110
764



The Origin and Function of the 'Operative Procedure' Series

*This series of plates published by Johnson & Johnson in
the leading surgical journals of the United States of
America was prepared in collaboration with the staff of
Surgeons Gynecology and Obstetrics*

THE SURGEON who casually views or carefully studies these illustrations will realize that they are not to be found elsewhere in medical or surgical literature. As originals, it is understood that they have to be carefully prepared but the amount of effort expended in selecting the subject and then later selecting the important steps to be illustrated may not be comprehended as quickly.

There is probably no branch of science or art which has given more evidence of progress in the last two decades than the science of surgical technique. The perfection of older methods and originality in new methods have given to the world a mass of material which is worthy of careful immediate study and preservation for future reference.

The selection of the subjects in this series was made with the help of several surgeons whose practice and experience enabled the pointing out of not only the most timely technique but likewise the outstanding steps. In this way the artist was furnished with material from which he might accurately illustrate approved technique in a new and original manner.

LIGATURE DEPARTMENT
JOHNSON & JOHNSON
SLOUGH BUCKS

SUTURE TECHNIQUE (NO 1)

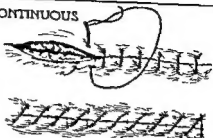
PURSE STRING



Tied



CONTINUOUS

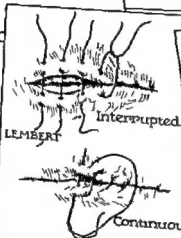


Two types

CUSHING



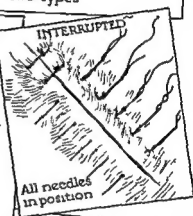
LEMBERT



Interrupted

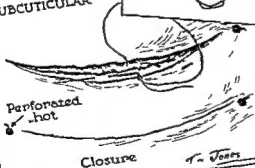
Continuous

INTERRUPTED



All needles in position

SUBCUTICULAR

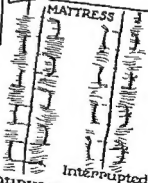


Perforated
hot

Closure

Jones

MATTRESS



Continuous

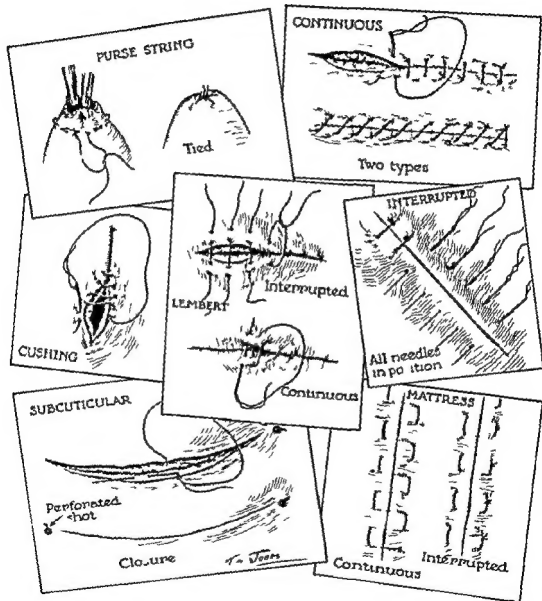
Interrupted

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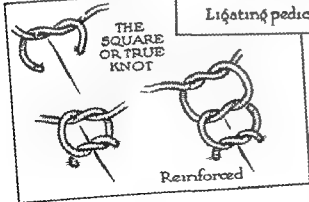
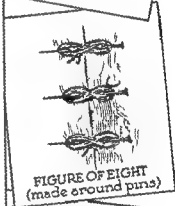
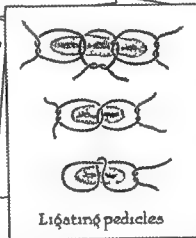
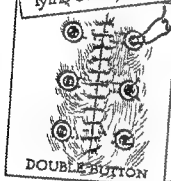
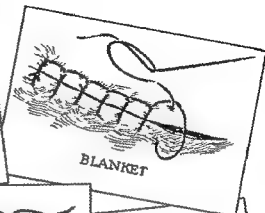
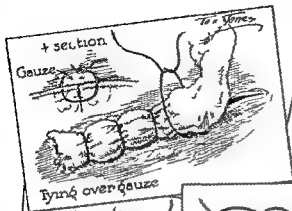
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SUTURE TECHNIQUE (NO 1)

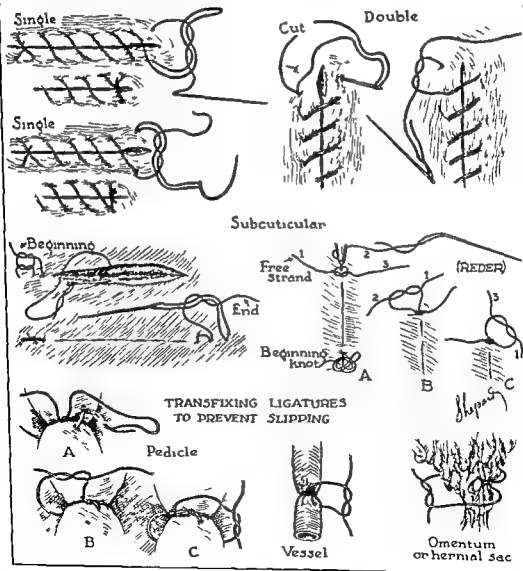


SUTURE TECHNIQUE (NO 2)

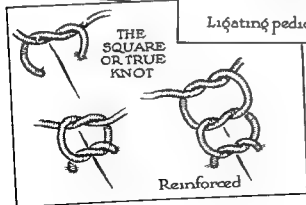
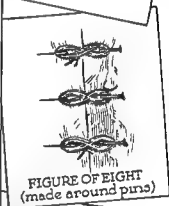
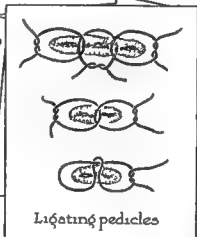
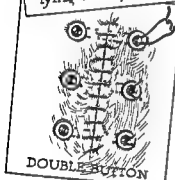
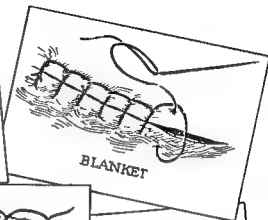
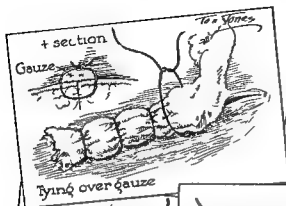


SUTURE TECHNIQUE (NO 3)

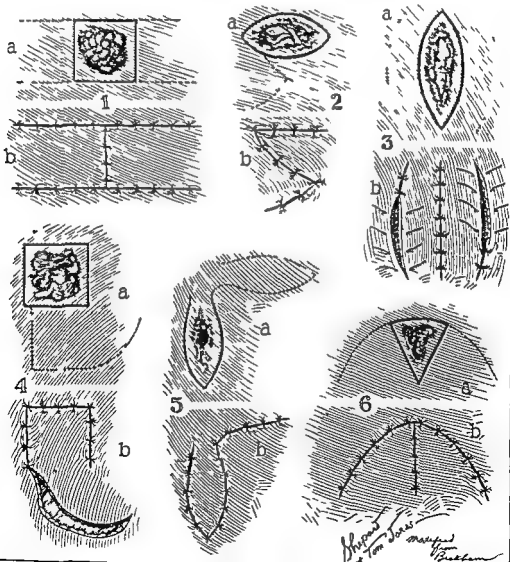
METHODS FOR SECURING THE ENDS OF CONTINUOUS SUTURES



SUTURE TECHNIQUE (NO 2)

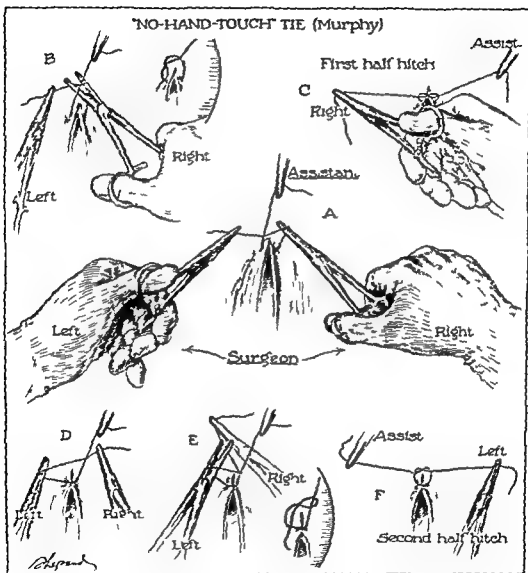


CLOSURE OF SKIN DEFECTS

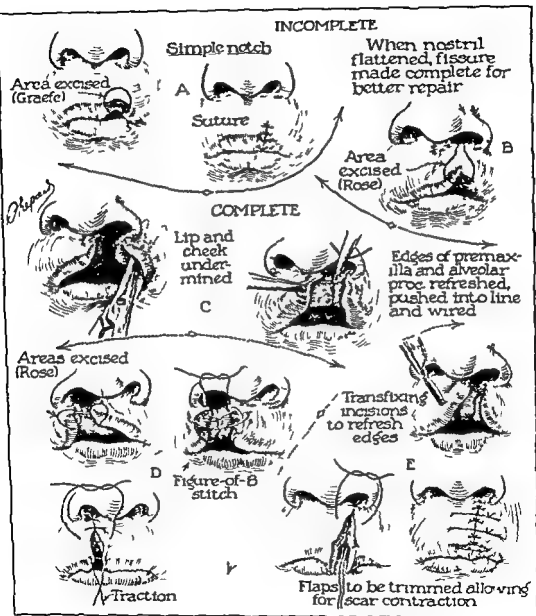


SUTURE TECHNIQUE (NO 4)

'NO-HAND-TOUCH' TIE (Murphy)



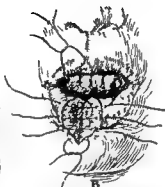
OPERATIONS FOR HARELIP—SINGLE CLEFT



RESECTION FOR EPITHELIOMA OF LIP

70 Jones

EARLY CASE

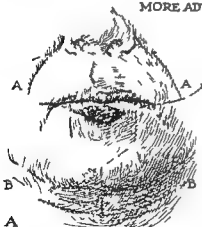


Sutures in position
(Stitches in mucous
membrane tied first)

C
Sutures tied (Note full
ness in center to prevent
subsequent notching)



MORE ADVANCED CASE

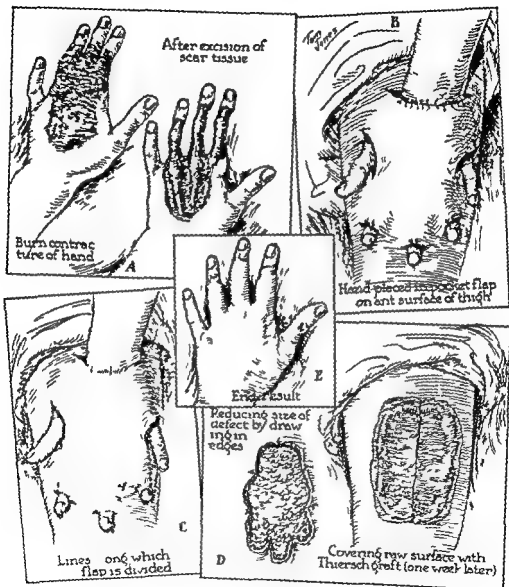


Incisions AA Triangles of skin
removed to permit reconstruc-
tion of lower lip BB Incision
for removal of lymph nodes

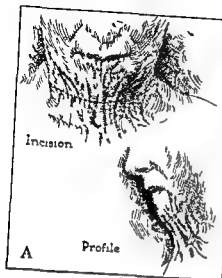


Operation completed Note
reconstructed vermillion
border CC of mucous
membrane of cheek

SKIN GRAFTING FOR BURN CONTRACTURE



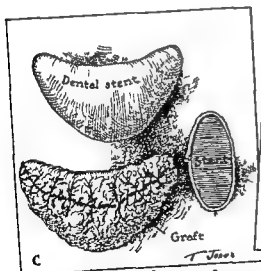
SKIN GRAFTING—INLAY GRAFTS



Burn contracture of neck



Raw surface resulting from simple division of scar and freeing of tension

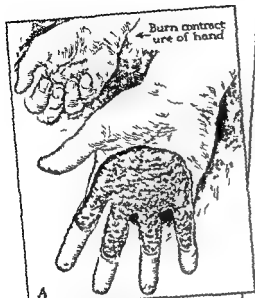


Graft with raw surface outward wrapped about mold of dental stent



Graft covered mold buried in raw surface

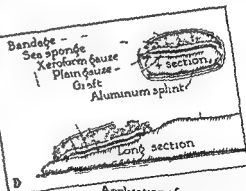
SKIN GRAFTING—FREE FULL THICKNESS GRAFTS



Extent of raw surface resulting from excision of scar



Suture of graft completed with fine sutures

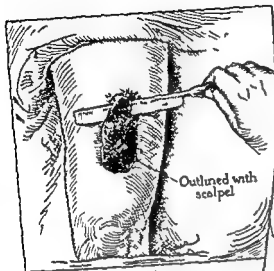


Application of pressure dressing over graft

TREATMENT OF BURN CONTRACTURE OF AXILLA



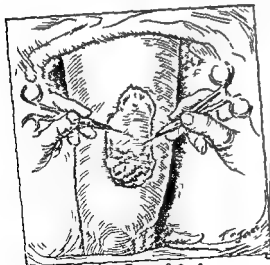
SKIN GRAFTING—SPLIT GRAFTS



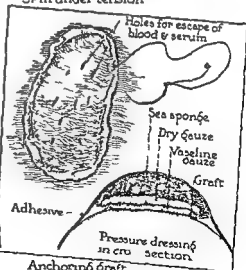
Excision of granulation tissue from raw area



Cutting of graft skin under tension

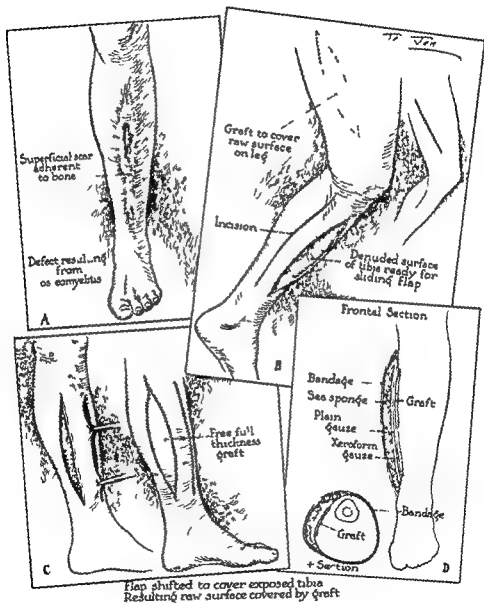


Teasing graft into position with needles

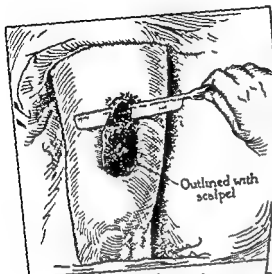


Anchoring graft with fine skin suture

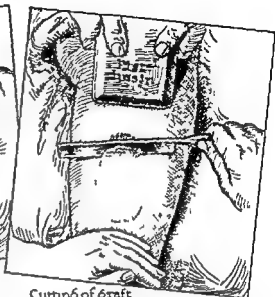
FULL THICKNESS GRAFT WITH SLIDING FLAP



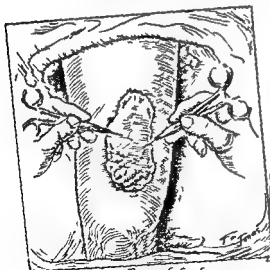
SKIN GRAFTING—SPLIT GRAFTS



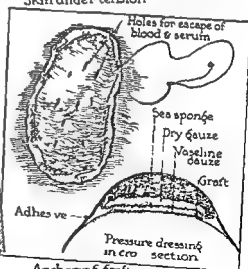
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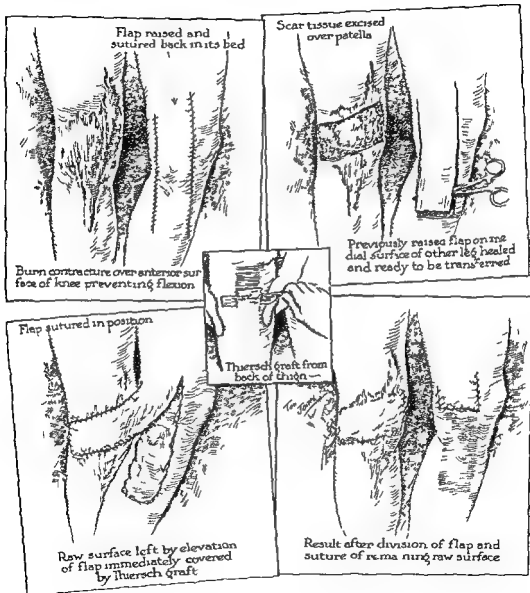


Teasing graft into position with needles



Anchoring graft with fine skin suture

DELAYED PEDICLED FLAP

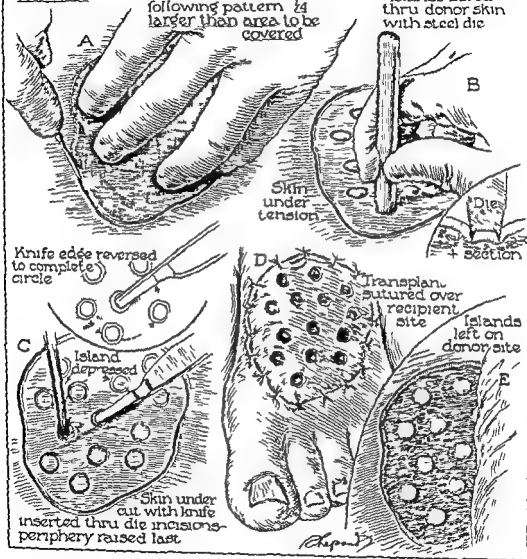


SKIN GRAFTING—SIEVE GRAFT (NO 1)

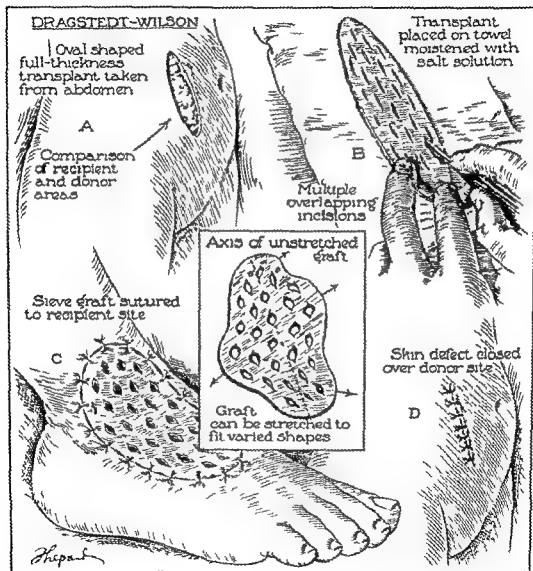
DOUGLAS

Donor skin incised following pattern $\frac{1}{4}$ larger than area to be covered

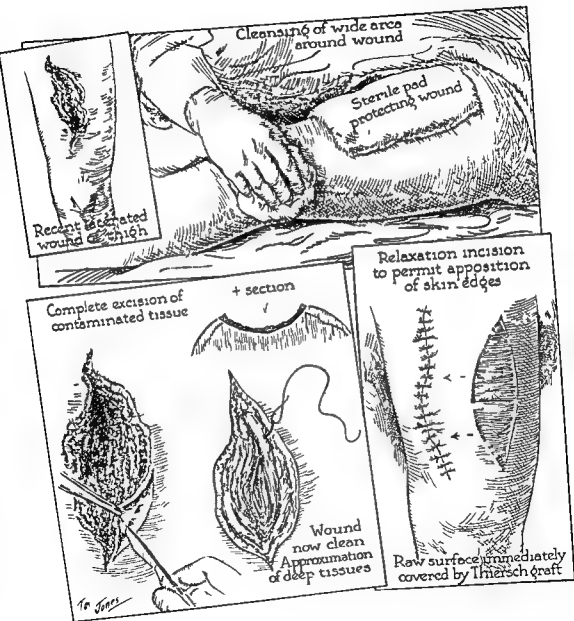
Islands bored thru donor skin with steel die



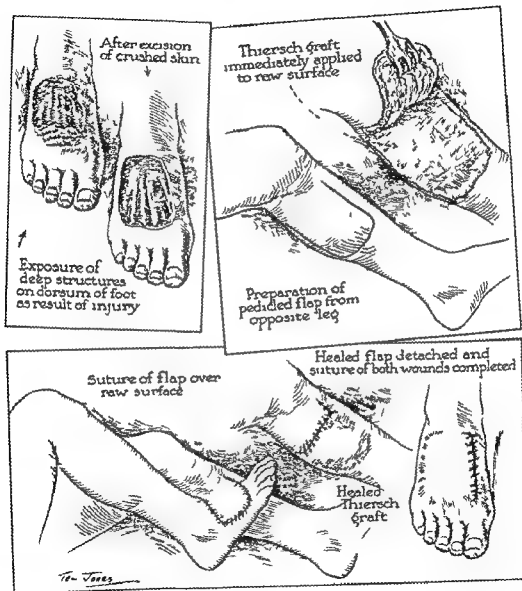
SKIN GRAFTING—SIEVE GRAFT (NO 2)



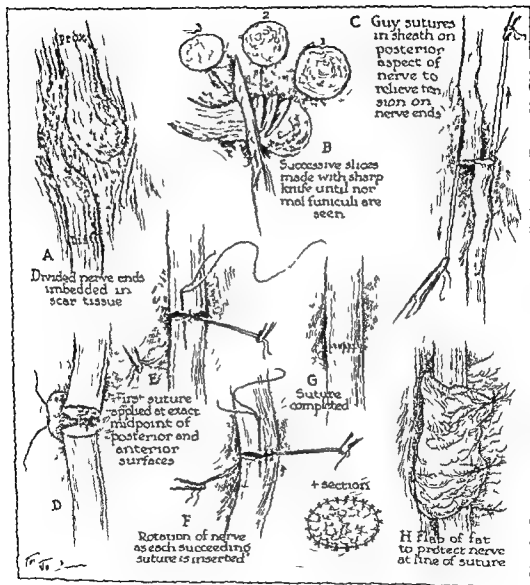
IDEAL TREATMENT OF LACERATED WOUND



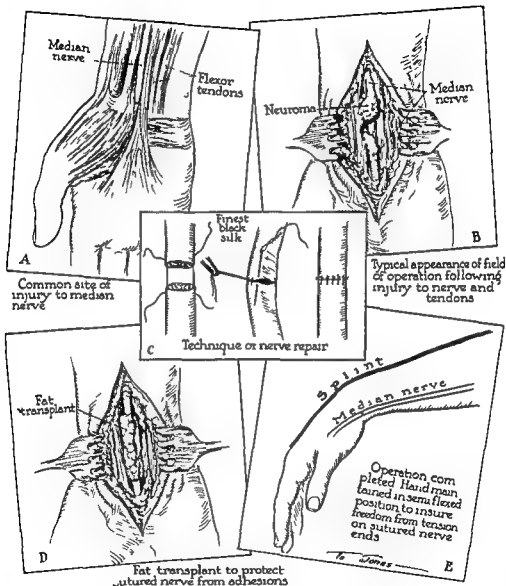
IMMEDIATE TREATMENT OF CRUSHING INJURY OF FOOT



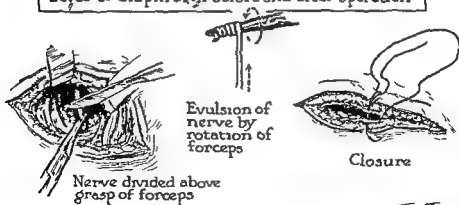
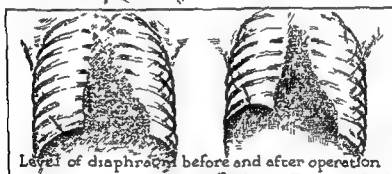
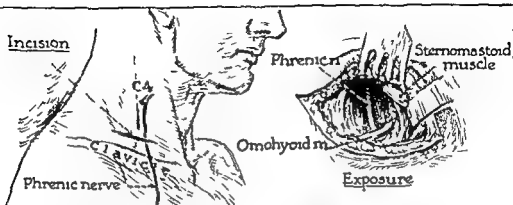
TECHNIQUE OF NERVE SUTURE



NERVE SUTURE

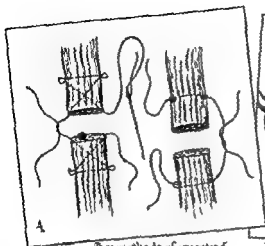


PHRENIC NEURECTOMY

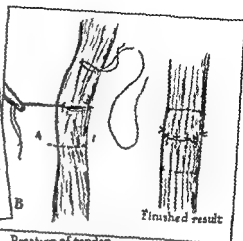


Tom Jones

TENDON SUTURES



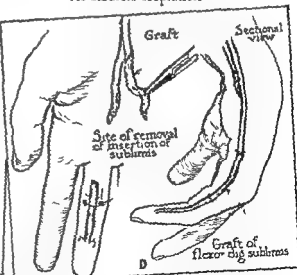
Two methods of inserting stay sutures in divided tendons



Rotation of tendon to permit insertion of sutures for accurate coaptation

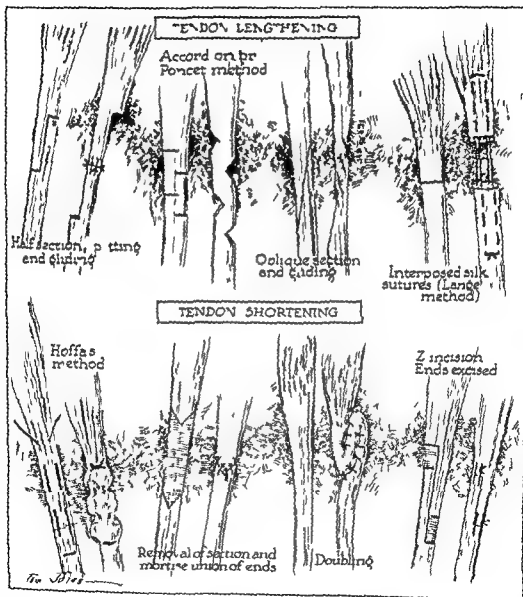


A common site (x) of tendon injury with resulting retraction of tendon ends

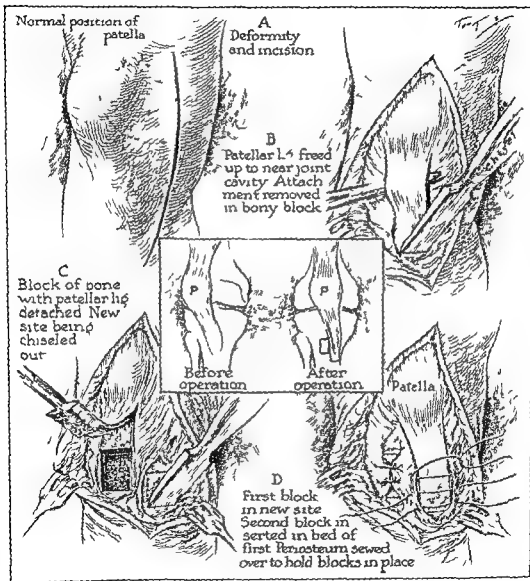


Technique of repair (finger semi flexed)

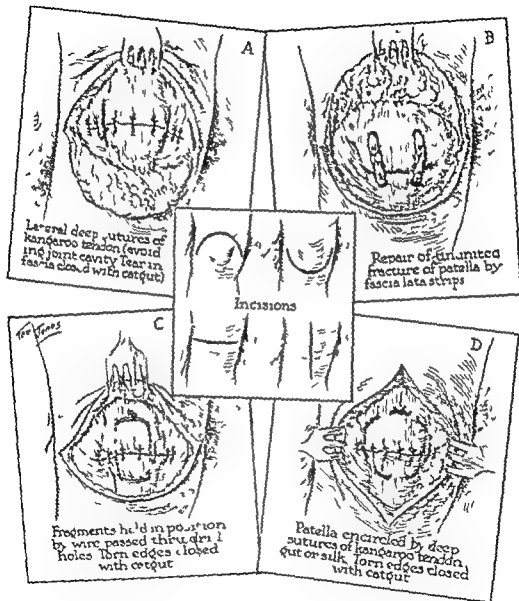
TENDON LENGTHENING AND SHORTENING



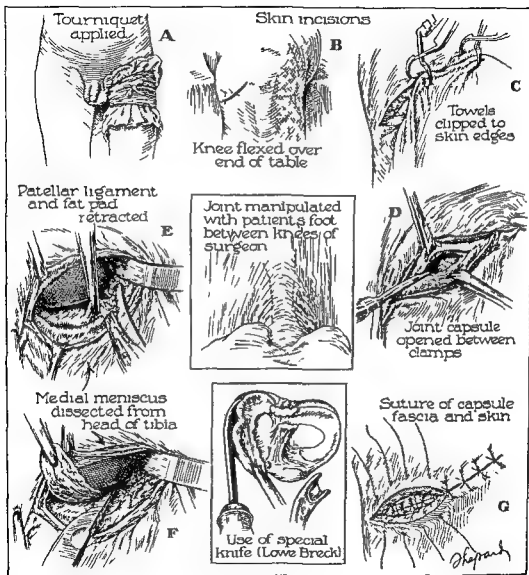
REPAIR OF RECURRENT DISLOCATION OF PATELLA



REPAIR OF FRACTURED PATELLA

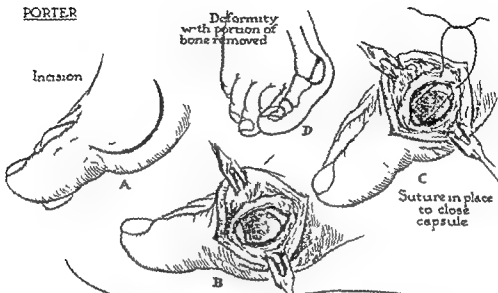


REMOVAL OF SEMILUNAR CARTILAGE

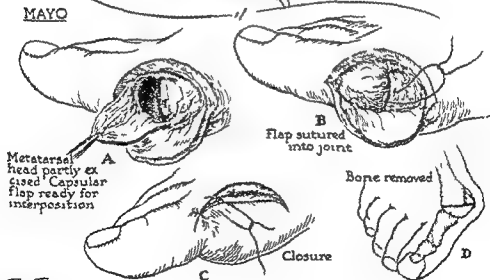


OPERATIVE TREATMENT OF BUNIONS

PORTER

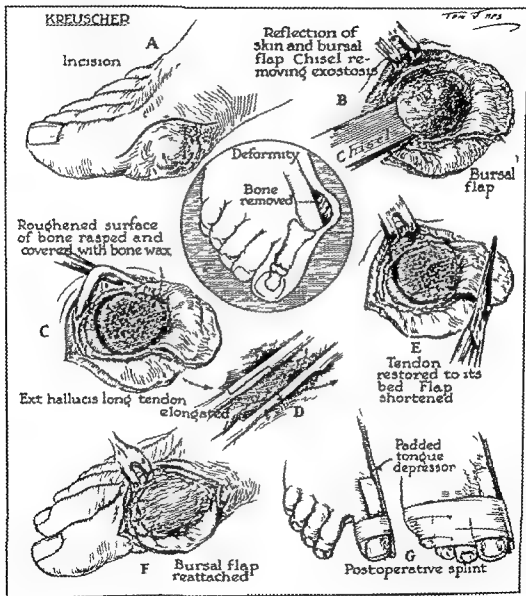


MAYO

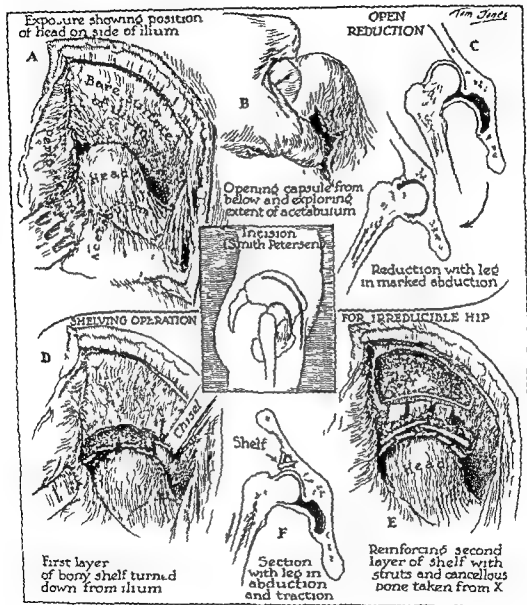


To Jones—

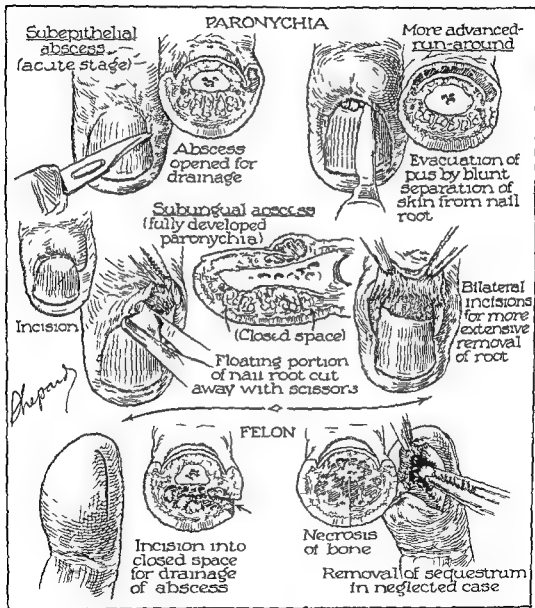
OPERATIVE TREATMENT OF BUNIONS (NO 2)



OPERATION FOR CONGENITAL DISLOCATED HIP



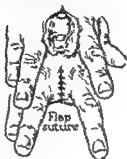
SURGICAL TREATMENT FOR PARONYCHIA AND FELON



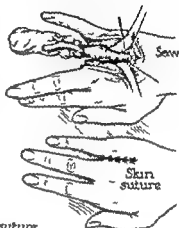
AMPUTATION OF THE DIGITS

METACARPOPHALANGEAL DISARTICULATION AND AMPUTATION PROXIMAL TO THE METACARPAL HEAD

Incisions



Flap suture



Skin suture

INTERPHALANGEAL DISARTICULATION

Rubber band tourniquet



Tendons left long for suture



Flap suture



Amputation of a phalanx. Median and lateral incisions with long anterior flap

DISARTICULATION OF THE TOES



Amputation of the five toes

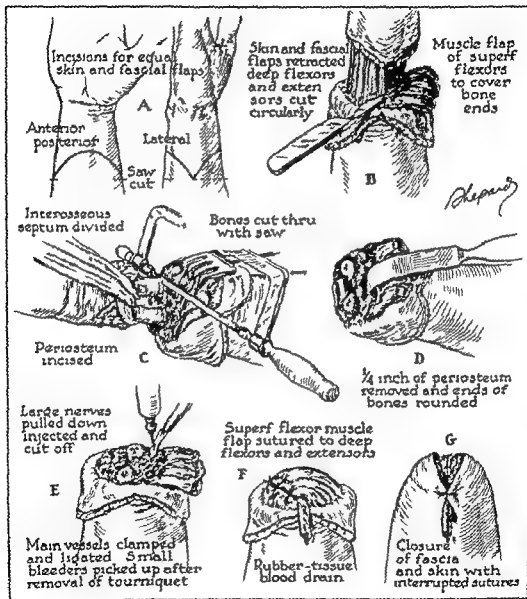


Suture of skin flap

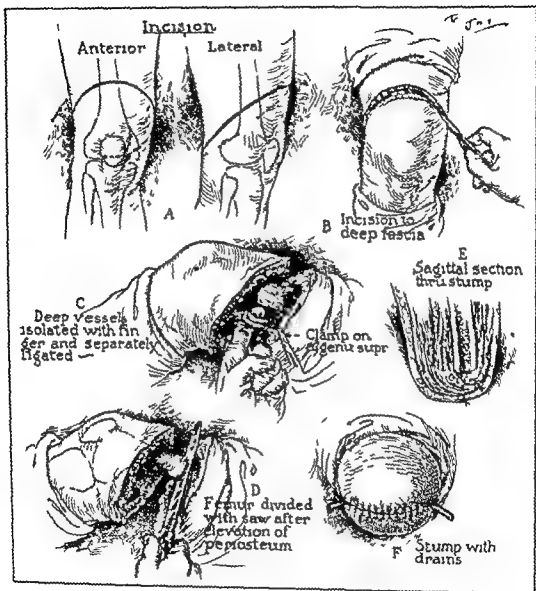


Incisions for removal of individual toes

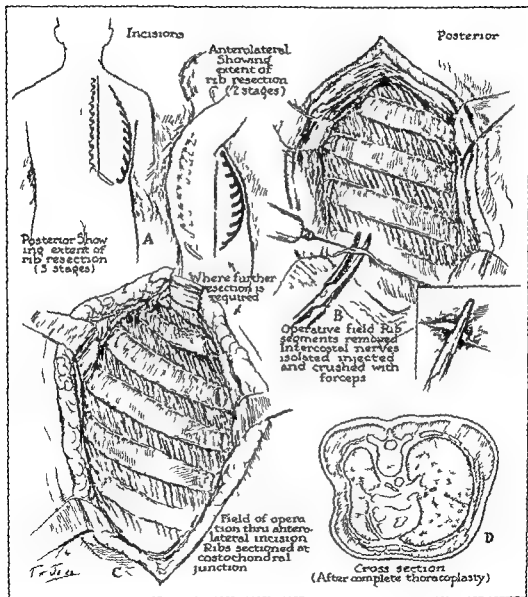
AMPUTATION OF FOREARM



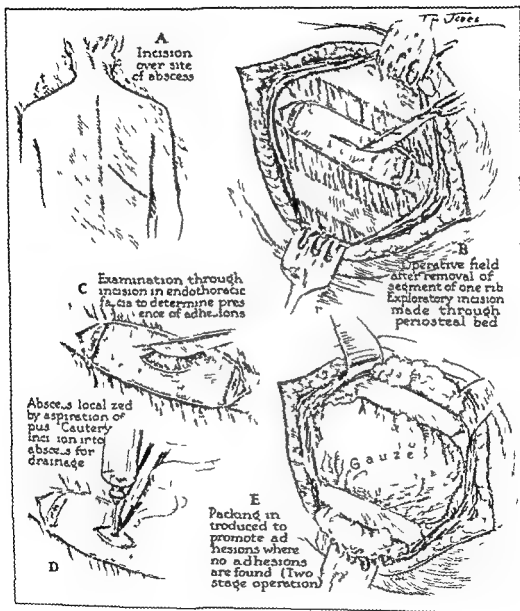
AMPUTATION FOR GANGRENE OF LOWER EXTREMITY



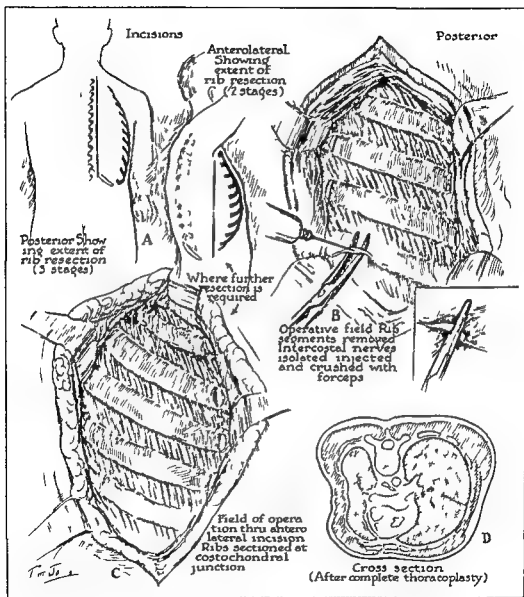
THORACOPLASTY



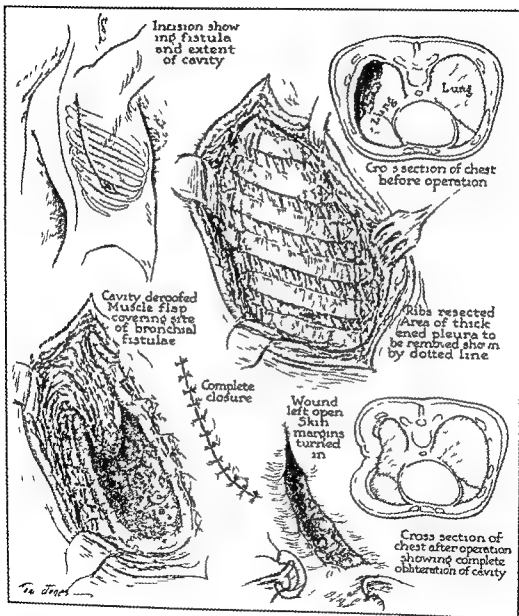
SURGICAL TREATMENT OF LUNG ABSCESS



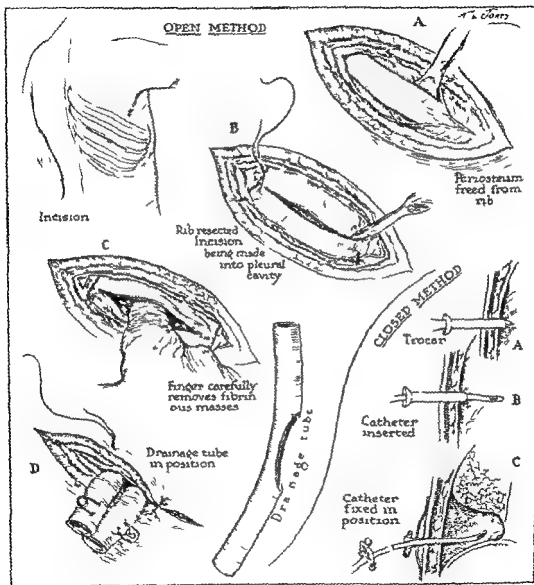
THORACOPLASTY



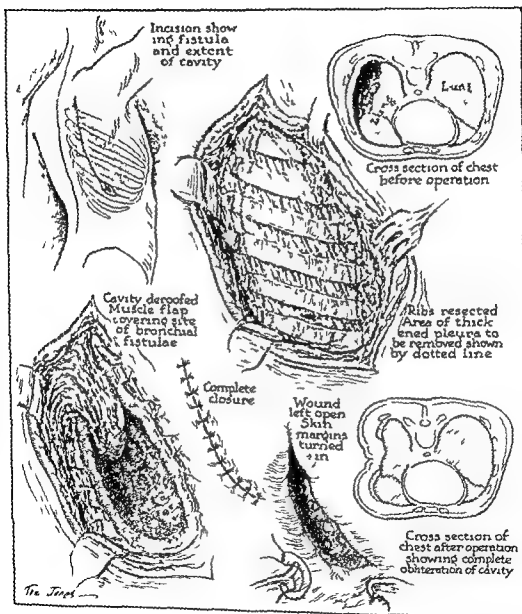
SURGICAL TREATMENT OF ACUTE EMPYEMA



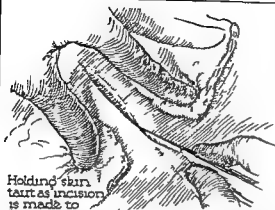
SURGICAL TREATMENT OF ACUTE EMPYEMA



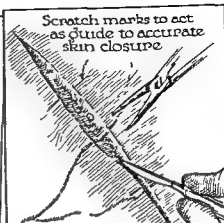
SURGICAL TREATMENT OF ACUTE EMPYEMA



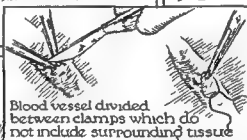
INCISION AND CLOSURE OF WOUNDS



Holding skin taut as incision is made to facilitate accurate technique

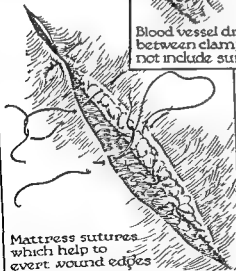


Scratch marks to act as guide to accurate skin closure

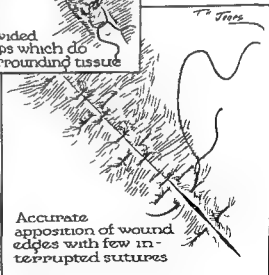


Blood vessel divided between clamps which do not include surrounding tissue

Blood vessel exposed and isolated before division

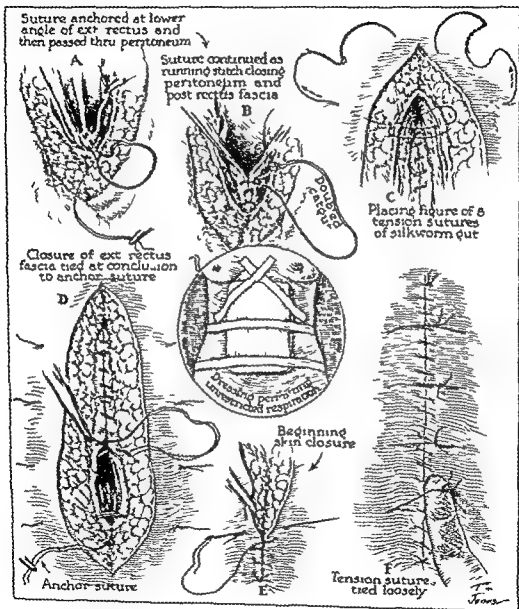


Mattress sutures which help to evert wound edges

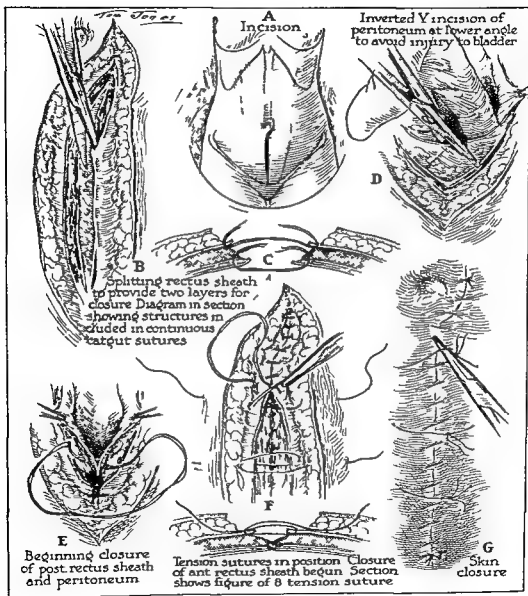


Accurate apposition of wound edges with few interrupted sutures

CLOSURE OF RECTUS INCISION

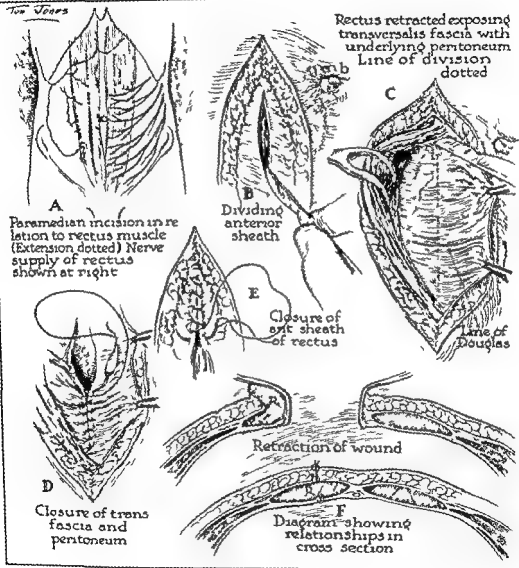


THE LOW MIDLINE INCISION



PARAMEDIAN INCISION FOR LAPAROTOMY

Tom Jones

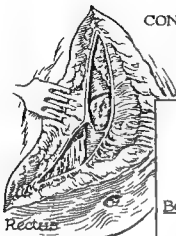
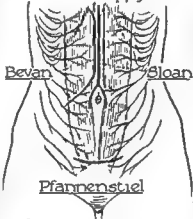


ABDOMINAL INCISIONS

CONSERVING INNERVATION OF THE RECTI

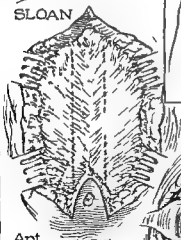
BEVAN
(Gall bladder on right
side spleen on left)

Initial incisions and
nerve supply



Rectus

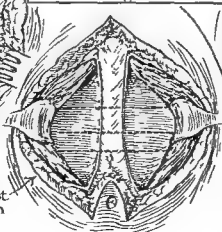
SLOAN



Ant
sheath

Optional
levels post
sheath

Shepard

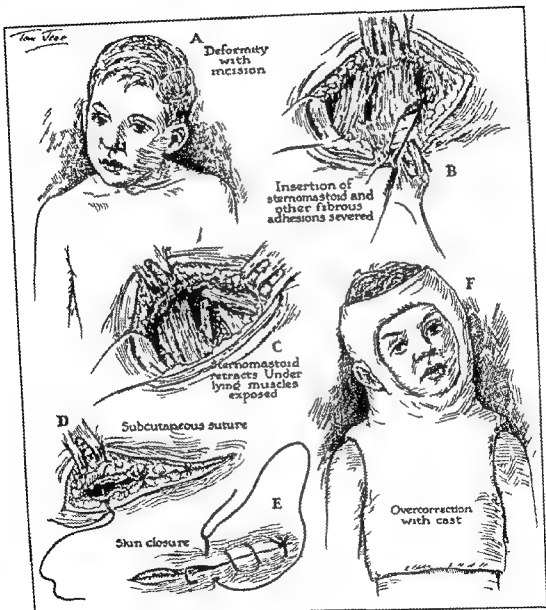


PFANNENSTIEL

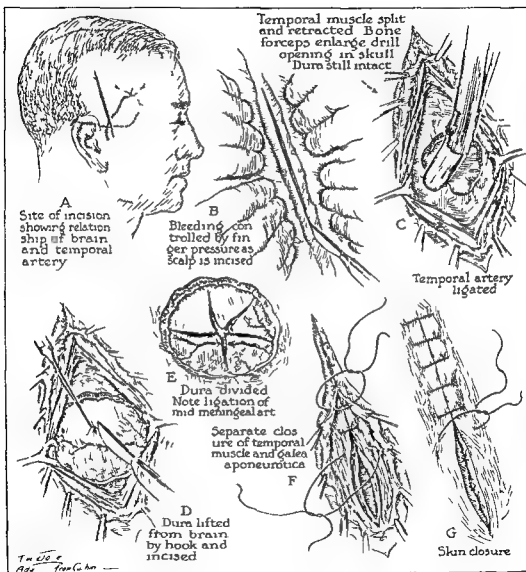


Transversalis
fascia

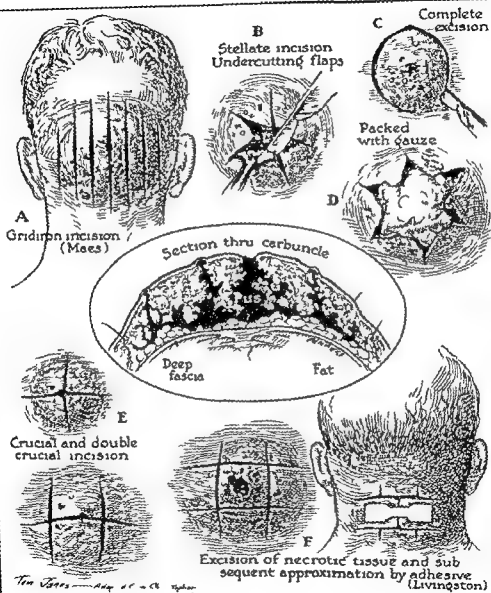
OPERATION FOR TORTICOLLIS



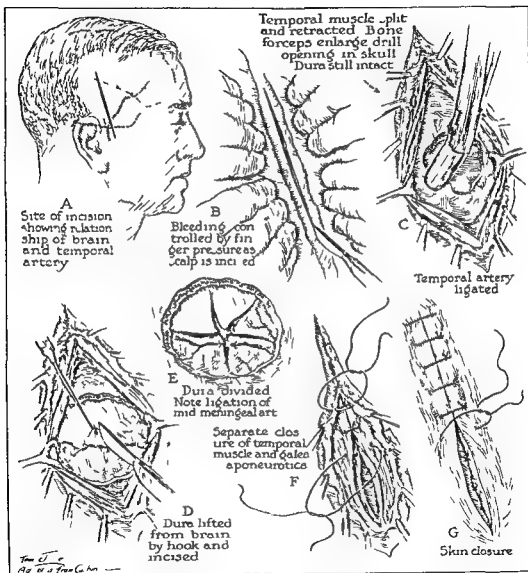
SUBTEMPORAL DECOMPRESSION



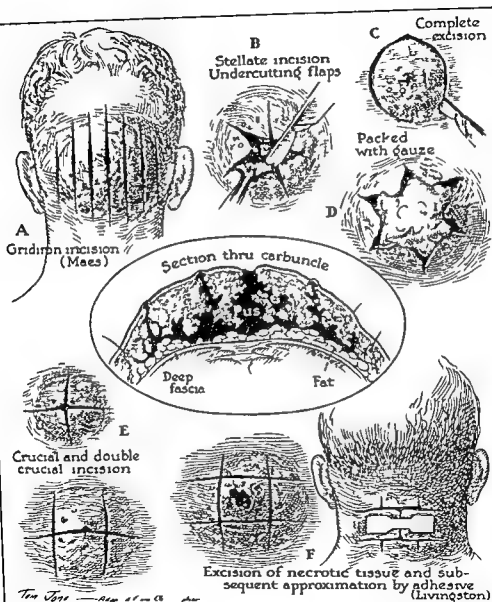
SURGICAL TREATMENT OF CARBUNCLE



SUBTEMPORAL DECOMPRESSION

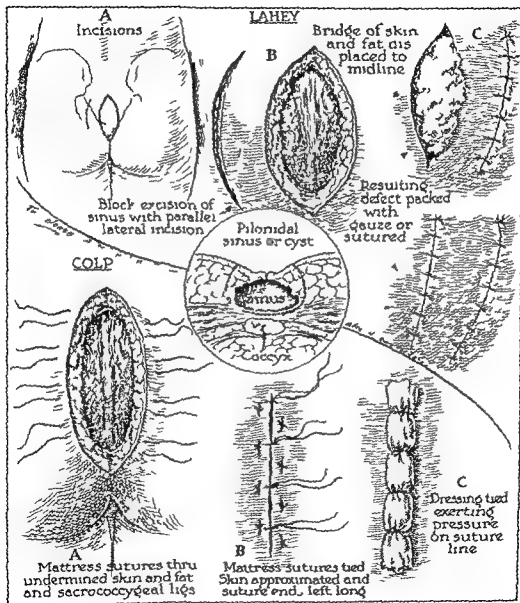


SURGICAL TREATMENT OF CARBUNCLE



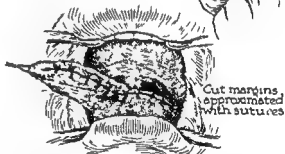
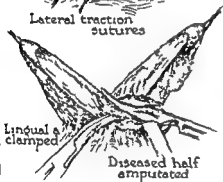
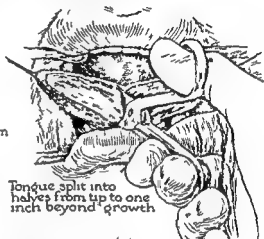
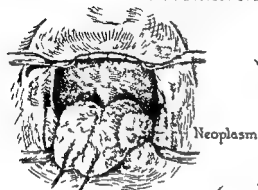
Tom Jones — Adapted from C. B. Jones

OPERATIVE TREATMENT OF PILONIDAL SINUS

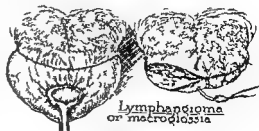


PARTIAL RESECTION OF THE TONGUE

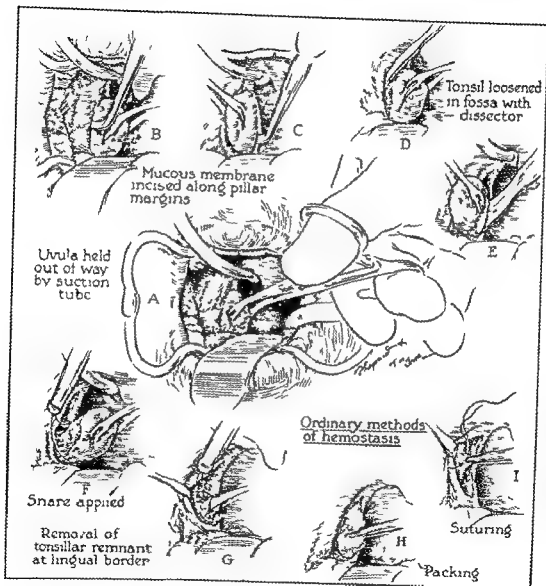
RESECTION OF LATERAL HALF OF TONGUE FOR MALIGNANCY (WHITEHEAD)



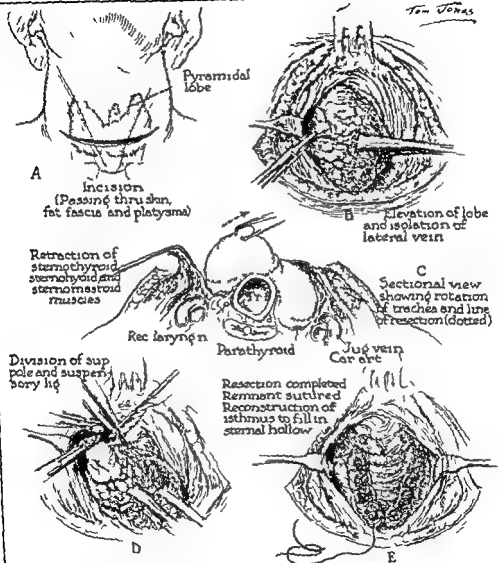
RESECTION FOR NON MALIGNANCY



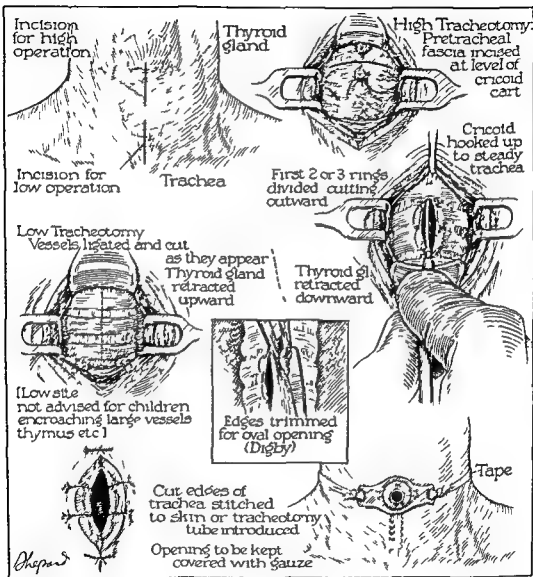
TONSILLECTOMY



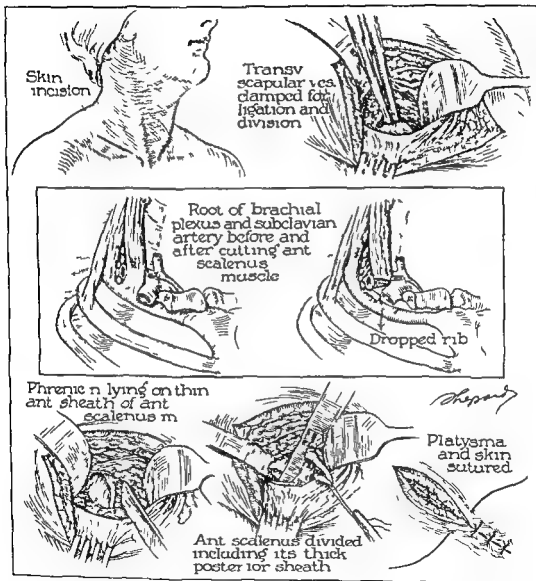
THYROIDECTOMY



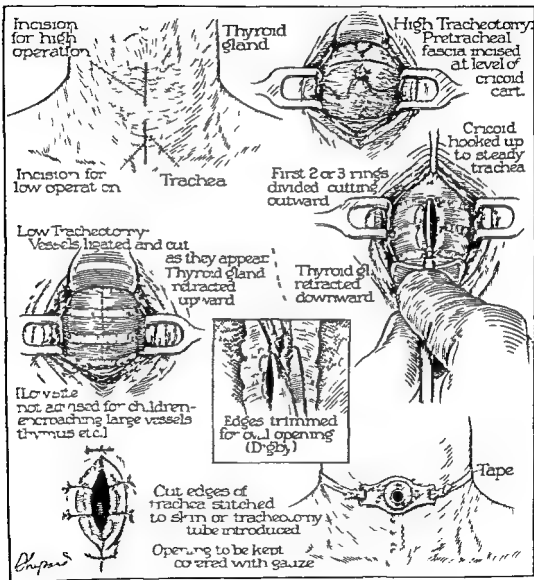
TRACHEOTOMY



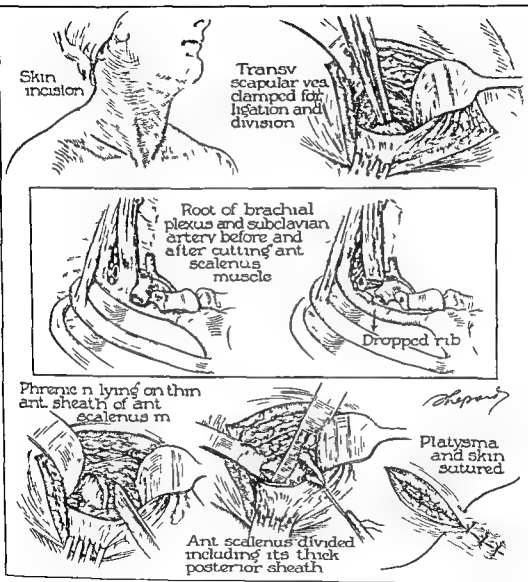
SCALenus ANTICUS SYNDROME



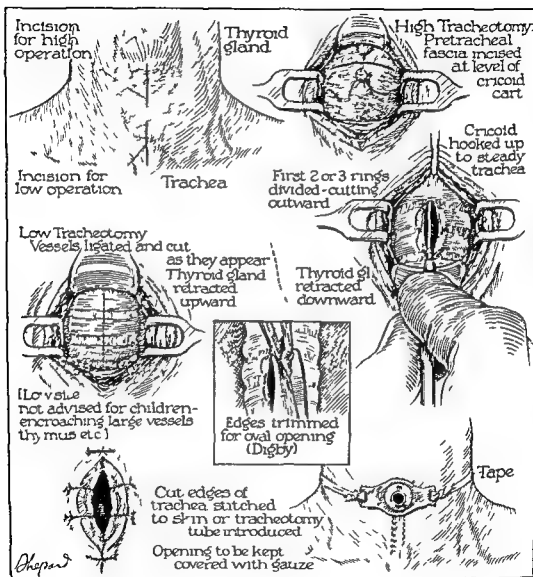
TRACHEOTOMY



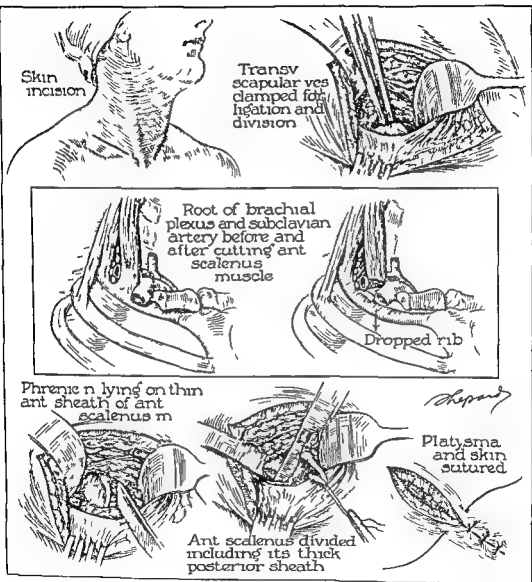
SCALENUS ANTICUS SYNDROME



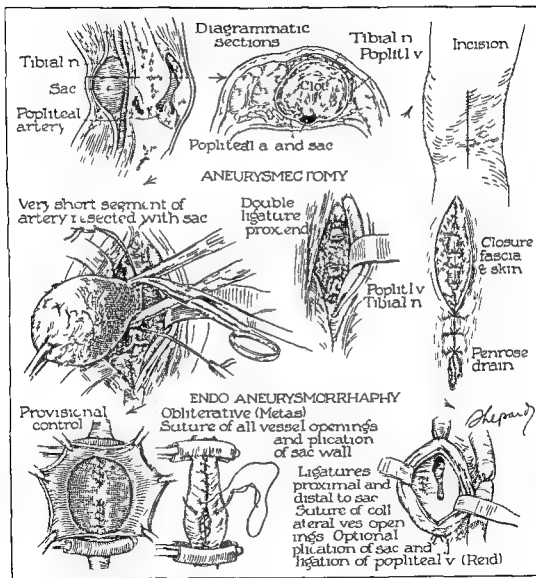
TRACHEOTOMY



SCALENUS ANTICUS SYNDROME



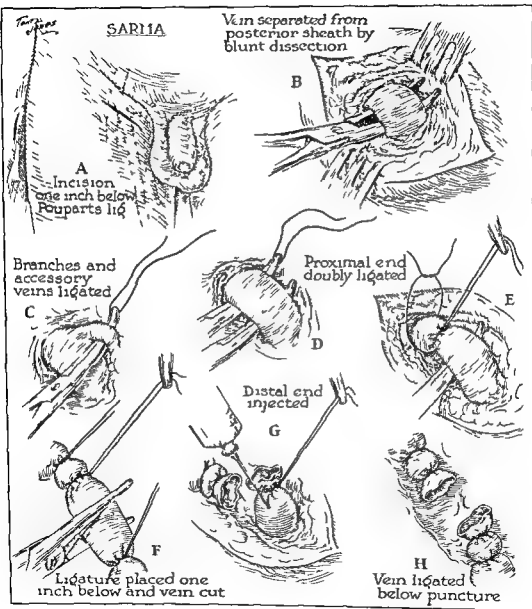
POPLITEAL ANEURYSM



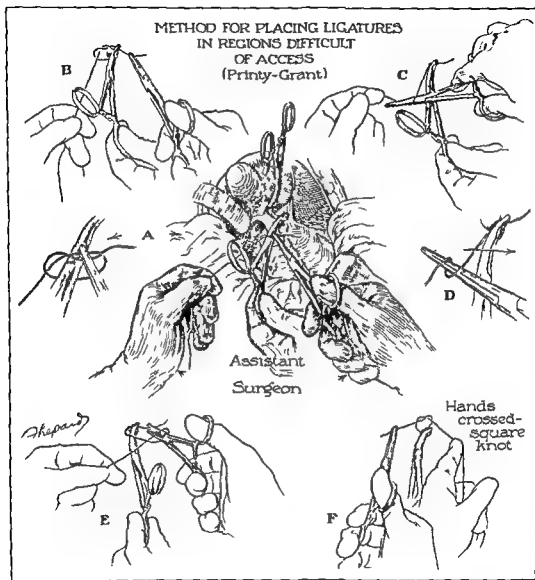
LIGATION OF VARICOSE SAPHENOUS VEIN

SARMA

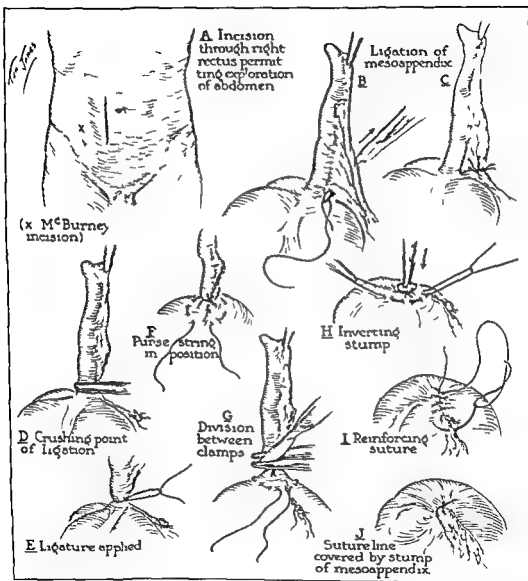
Vein separated from posterior sheath by blunt dissection



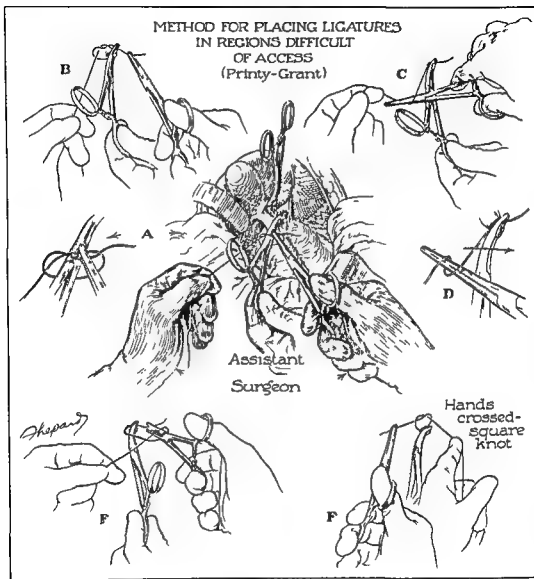
LIGATURE TECHNIQUE



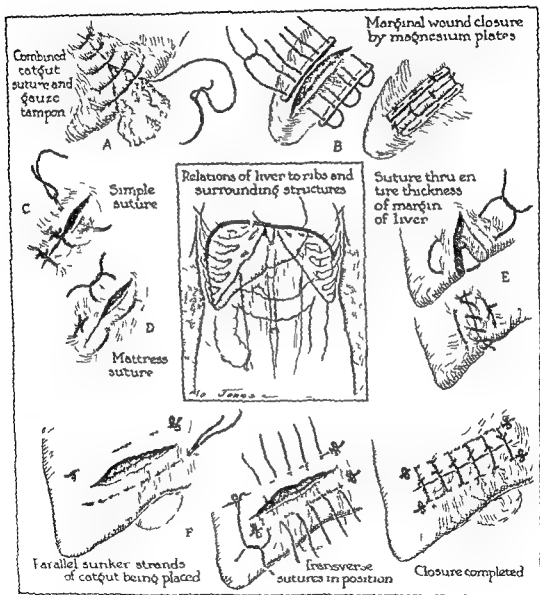
APPENDECTOMY



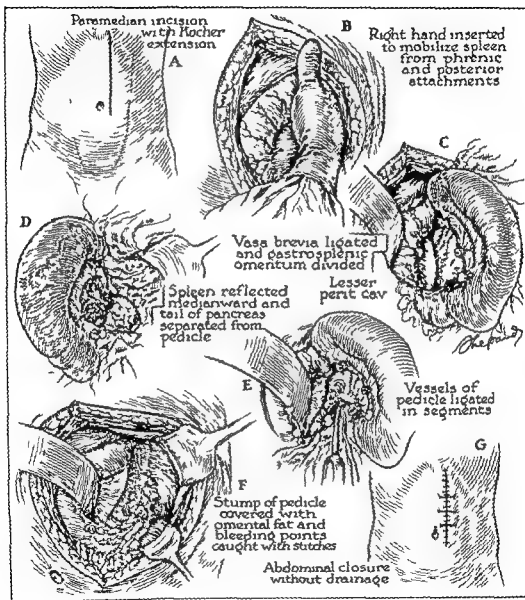
LIGATURE TECHNIQUE



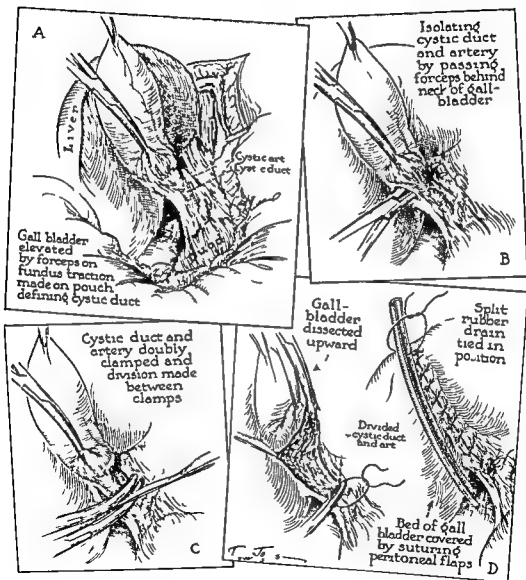
LIVER SUTURES



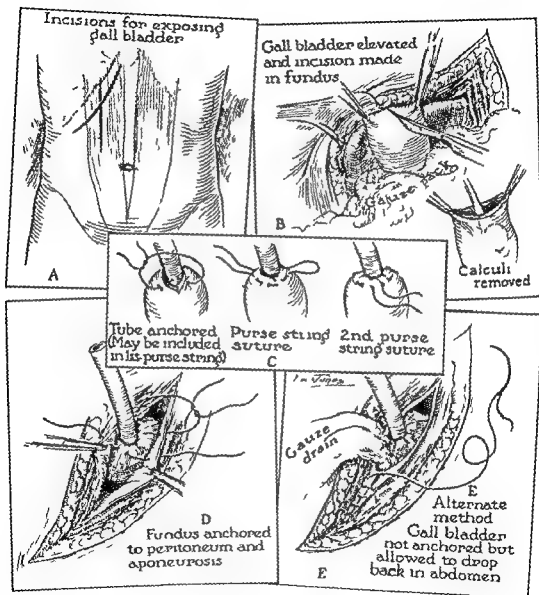
SPLENECTOMY



CHOLECYSTECTOMY



CHOLECYSTOSTOMY



OPERATIONS ON BILIARY TRACT (No 2)

HEPATICODUODENOSTOMY

Direct
Gatewood's
case

Posterior and lateral
sutures placed
duodenum & hepatic
duct incised

Modified Direct
(W J Mayo)

Flap from
crescent-
shaped
incision

Post and
latr. sutures

T tube

Ant sutures

Plastic
(Walton)

Flap sutured
to liver capsule

Indirect
(Jenckel)

Duod
opening
closed
around
tube

Long
flap

Witzel
duoden-
ostomy

Exposed tube
to be covered
with adjacent
tissues & omentum

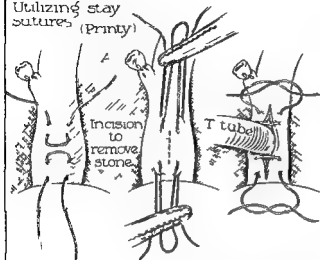
Flap sutured over tube
to duodenum & duct

(Tube removed after
epithelial outgrowth has
lined new canal)

OPERATIONS ON BILIARY TRACT (No 1)

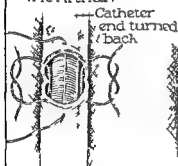
SUTURE OF THE COMMON DUCT AFTER REMOVAL OF STONE

Utilizing stay
sutures (Prinzy)



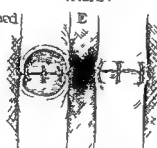
REPAIR OF INJURIES TO DUCT (with or without drainage)

D
Partly severed
(Mc Arthur)



Catheter extends
into duodenum

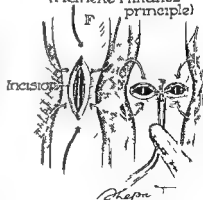
Completely severed
(Kehr)



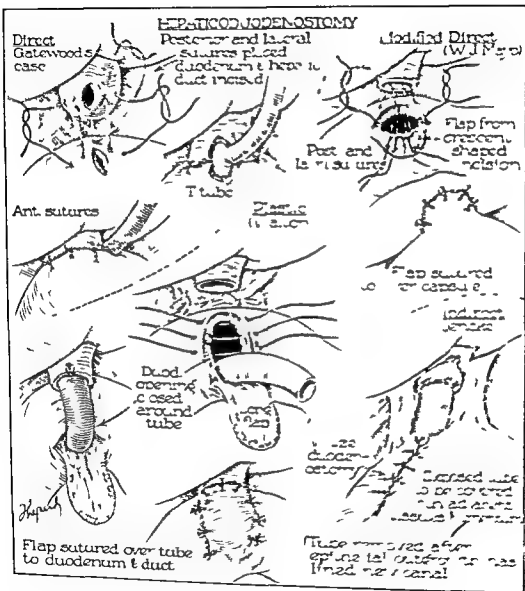
Suture of
posterior
wall

Suture of
anterior
wall

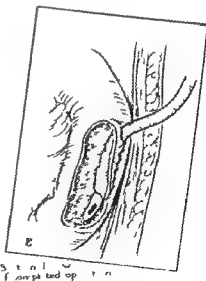
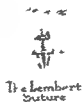
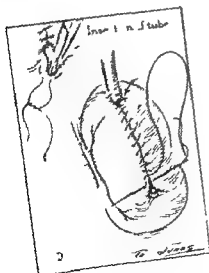
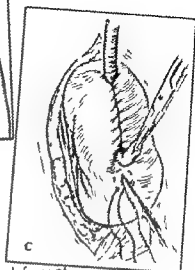
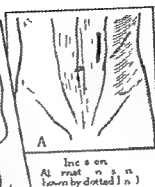
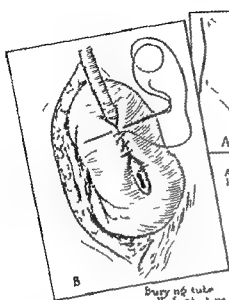
Partial stricture
(Heineke Mikulicz
principle)



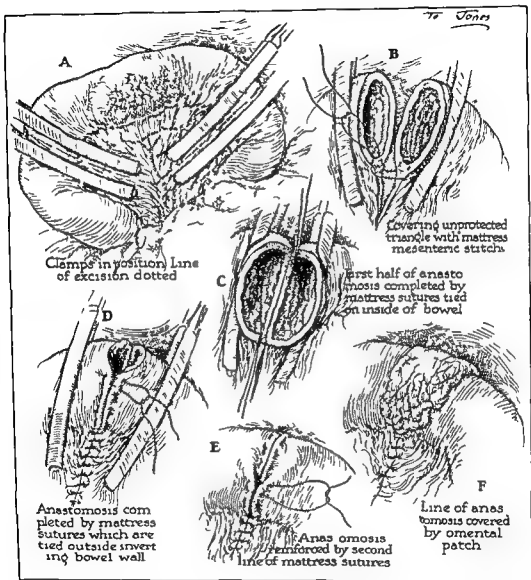
OPERATIONS ON BILIARY TRACT (No 2)



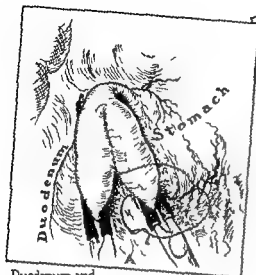
ENTEROSTOMY



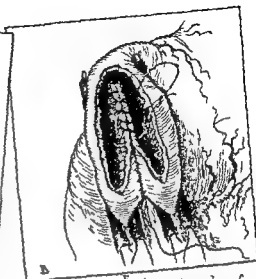
END TO END ENTERO ENTEROSTOMY (DYAS)



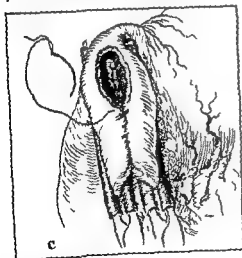
GASTRODUODENOSTOMY (FINNEY'S TECHNIQUE)



Duodenum and stomach clamped. First line of sutures being placed. Incision shown by dotted line.



First or posterior line of sutures completed. Inner through and through suture being placed.

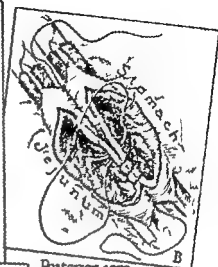
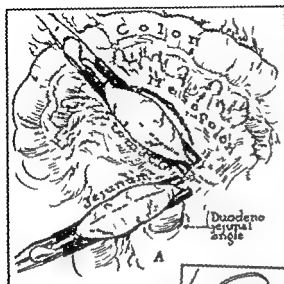


Anterior tier of sutures nearly completed.



Operation completed. Outer line of seromuscular sutures seen.

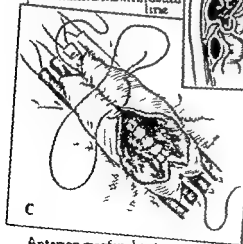
POSTERIOR GASTROJEJUNOSTOMY



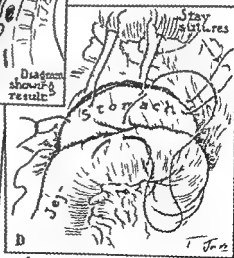
Stomach drawn thru slit meso colon, clamped & ready for approximation with fold of jejunum
Proposed incisions shown in dotted line



Posterior seromuscular suture placed
Posterior marginal suture being placed



Anterior marginal suture



Anterior seromuscular suture

GASTRODUODENOSTOMY (FINNEY'S TECHNIQUE)



Diagram A: Duodenum and stomach clamped. First line of sutures being placed. Incision shown by dotted line.



Diagram B: First or posterior line of sutures completed. Inner through and through suture being placed.

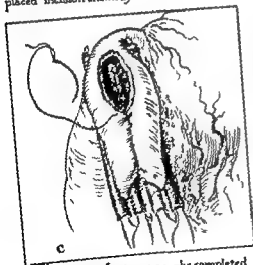


Diagram C: Anterior tier of sutures nearly completed.

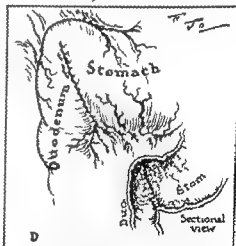
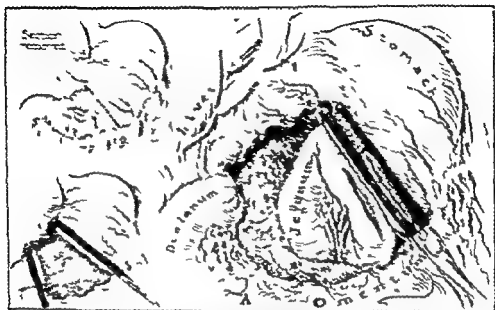
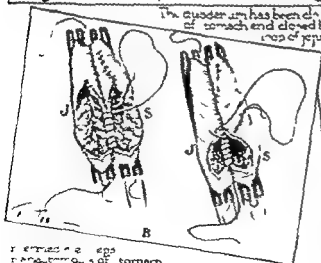


Diagram D: Operation completed. Outer line of seromuscular sutures seen.

PARTIAL RESECTION OF STOMACH (POLIA)



The duodenum has been divided by inversion. Upper 1/3 of stomach end closed by suture. Anastomosis between top of jejunum and lower 1/3 of stomach opening begun.



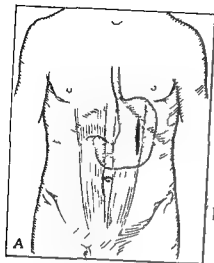
B

Diagram shows
resection of upper
part of stomach
and jejunum

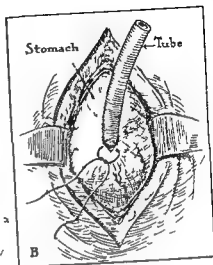


Diagram showing
finished result in section

GASTROSTOMY (STAMM METHOD)



A
Incision (Alternate incision shown by dotted line)

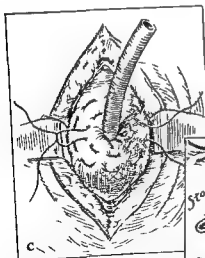


B
Tube fixed in stomach wall by single stitch

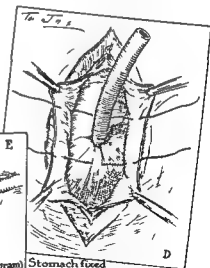
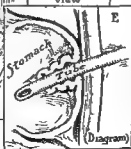
Penetration

Stomach

Sectional view



C
First purse string suture tied. Two others placed



D
Stomach fixed to ant abdominal wall

RAMMSTEDT OPERATION FOR PYLORIC STENOSIS



Incision and exposure



Incision on ant surface of pylorus thru peritoneum and supramuscle fibers only



Separation of lips of incision allowing muosa to protrude

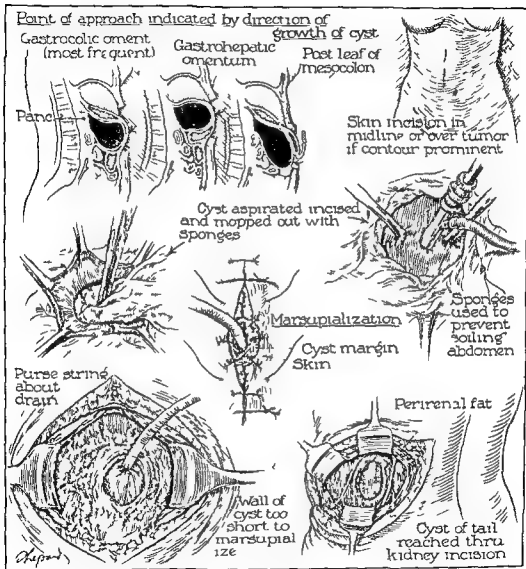


Connell suture



Abdominal wound carefully closed in layers

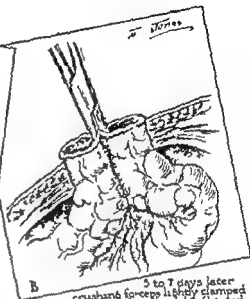
PANCREATIC CYST



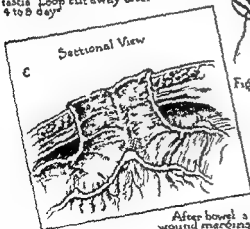
PARTIAL RESECTION OF COLON (MIKULICZ)



Loop of bowel
tied together and brought
out through wound. Note
fixation to peritoneum and
fascia. Loop cut away after
4 to 5 days.



5 to 7 days later
crushing forceps lightly clamped
on opposed bowel walls and tightened
daily until septum is cut through



After bowel is freed from
wound marking opening is invaginated
and closed with Lembert's sutures

INTUSSUSCEPTION

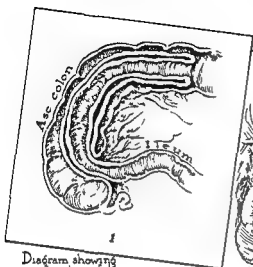
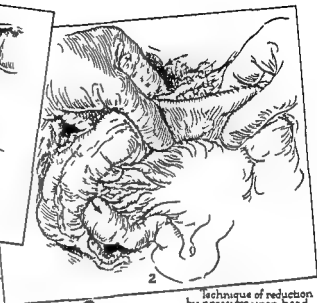


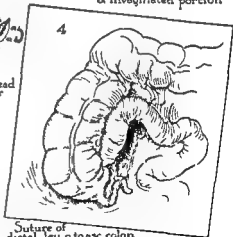
Diagram showing invagination of ileum into large bowel



Technique of reduction by pressure upon head of invaginated portion



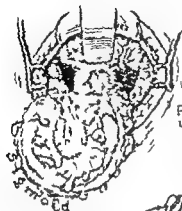
Reduction completed



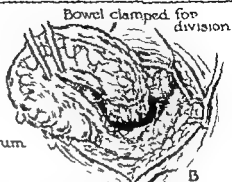
Suture of distal ileum to asc colon to prevent recurrence

RESECTION OF THE RECTUM

ABDOMINOPERINEAL OPERATION

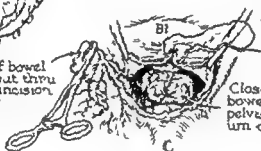


A
Peritoneum incised



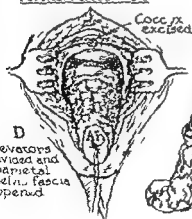
B
Sup. hemorrhoidal art. ligated and cut
Rectum mobilized

Proximal end of bowel to be brought out thru left abdominal incision for colostomy



C
Closed distal end of bowel deposited in pelvis and peritoneum closed over it

Perineal dissection



D
Levators divided and perineal pouch fascia opened

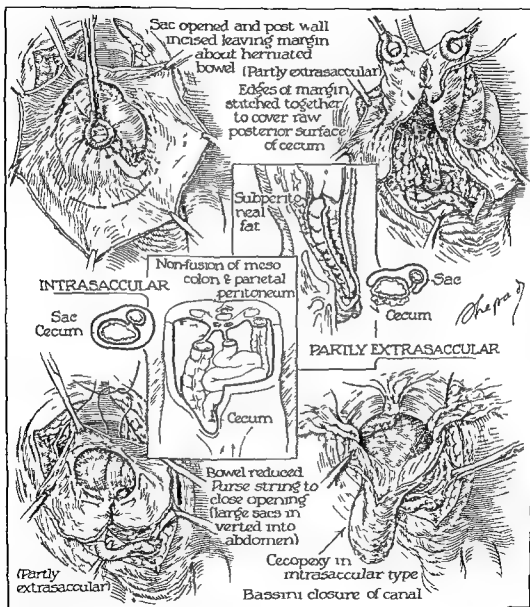


E
Anal end of rectum freed

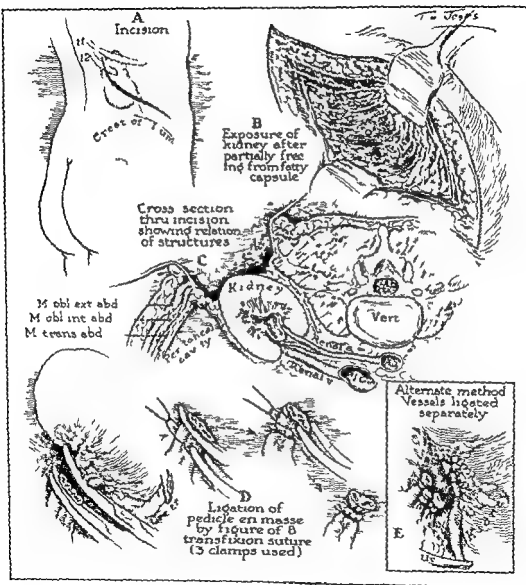


F
Perineal wound sutured on left open with gauze pack

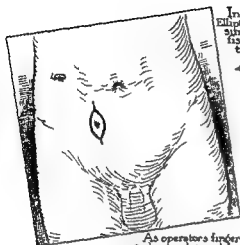
SLIDING HERNIA OF THE CECUM



NEPHRECTOMY

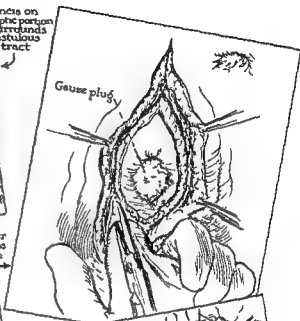


FECAL FISTULA



Incise on
Elliptic portion
surrounds
fistulous
tract

As operator's finger
explores relationships
excision of tract is com-
pleted by scissors



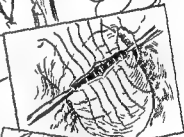
Gauze plug



Neck of tract exposed
Cut away from intestine
along dotted line

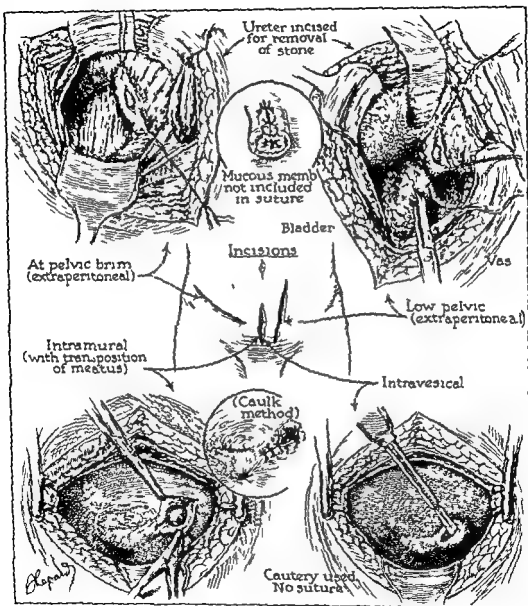


Ford
stitch

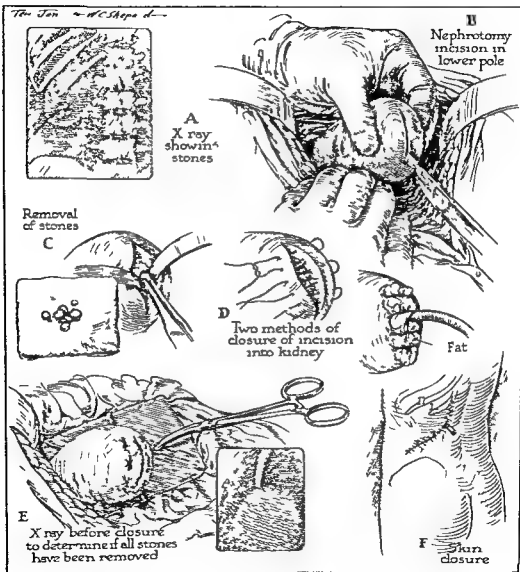


Opening into
intestine closed transversely

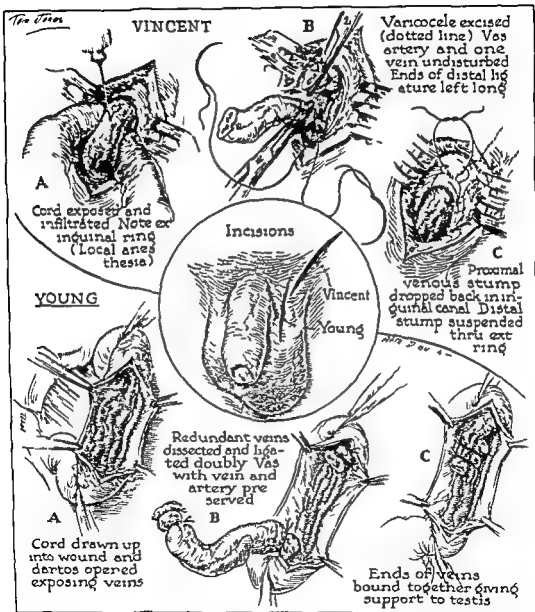
REMOVAL OF LOW URETERAL CALCULUS



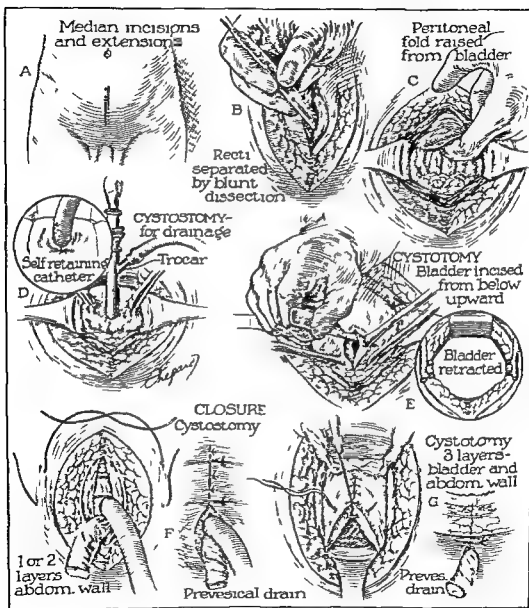
NEPHROTOMY FOR RENAL CALCULI



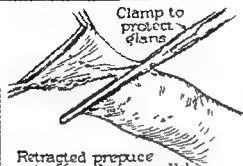
OPERATIONS FOR VARICOCELE (OR VARICOCELECTOMY)



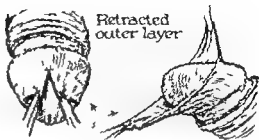
SUPRAPUBIC CYSTOSTOMY AND CYSTOTOMY



CIRCUMCISION



Retracted prepuce cut off in line parallel with corona



Inner layer trimmed to within one cm of corona



Alternate stitches of layers left long to include strip of vasalined gauze



Desired result partly covered glans

SECOND METHOD

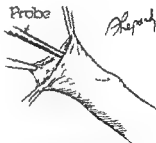
Cut

Adhesive



Dorsal split (Continuous suture of layers)

Vasalined gauze dressing



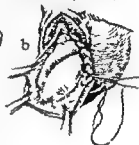
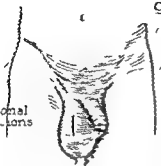
If adherent prepuce separated from glans

HYDROCELE

OPEN OPERATIONS

Tunica trimmed away
Hemostatic suture about
remaining margin

1
Optional
incisions



2 WINKELMANN



Tunica turned inside out
and sutured posterior
to cord and testis

3 ANDREWS - Testicle pushed through
small opening high in sac
Sac everted upon cord



4

INJECTION METHOD



Aspiration
of fluid

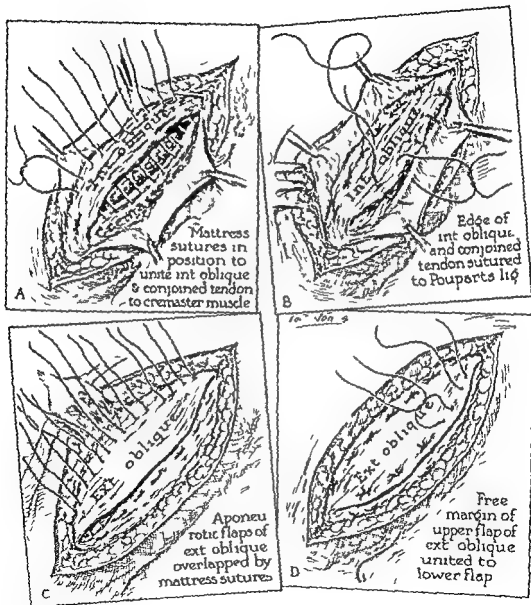


Injection
of irritant

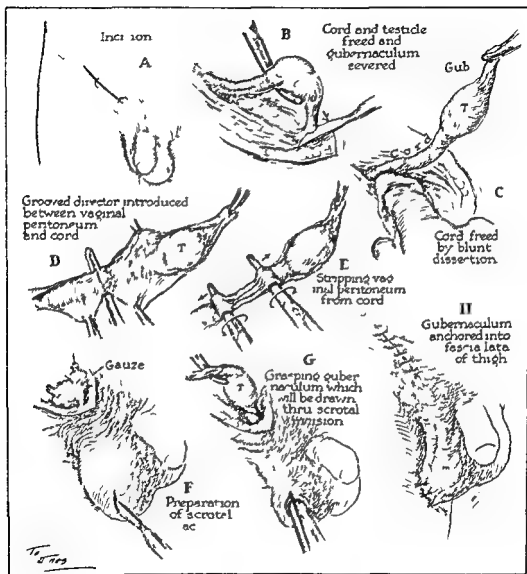


Massage
of scrotum

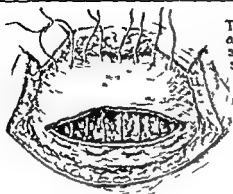
HALSTED OPERATION FOR INDIRECT INGUINAL HERNIA



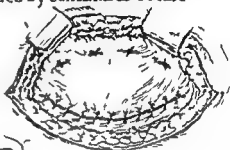
OPERATION FOR UNDESCENDED TESTIS (MCKENNA)



METHODS OF REPAIR IN LARGE UMBILICAL HERNIA



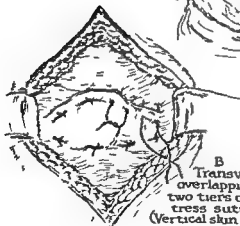
A
Transverse overlapping of
aponeurotic flaps by mattress
sutures Free edge of upper flap
secured by continuous suture



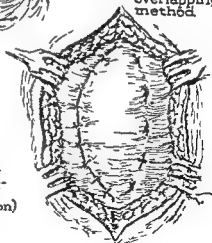
Incisions
Elliptic transverse
Elliptic vertical



C
Lateral
overlapping
method

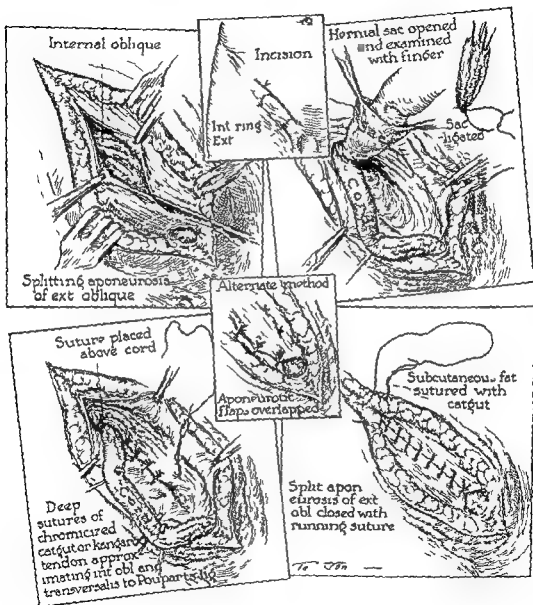


B
Transverse
overlapping by
two tiers of mat-
tress sutures
(Vertical skin incision)

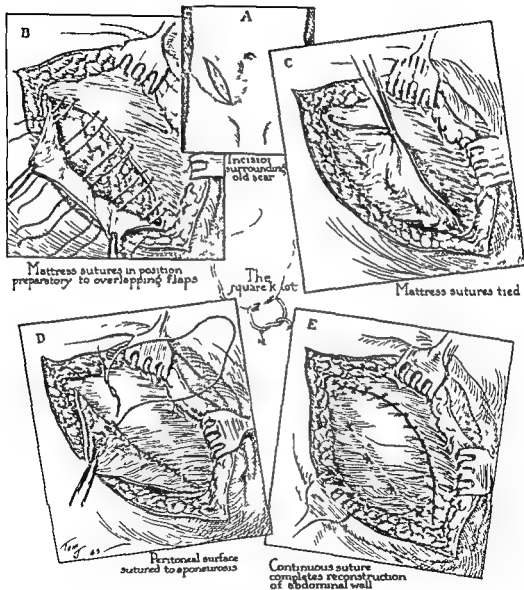


For Jones

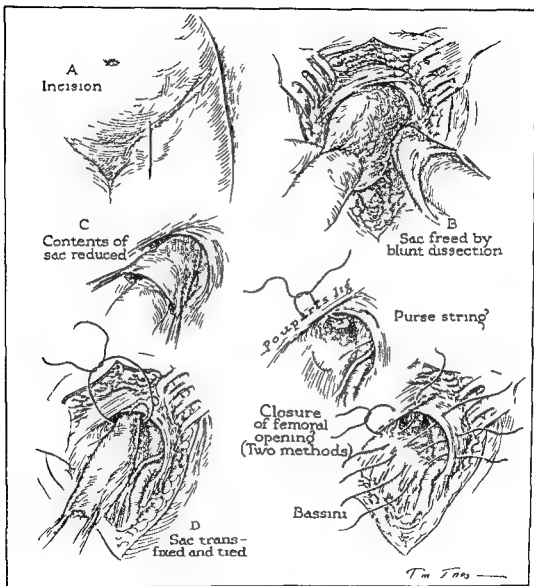
BASSINI OPERATION FOR INDIRECT INGUINAL HERNIA



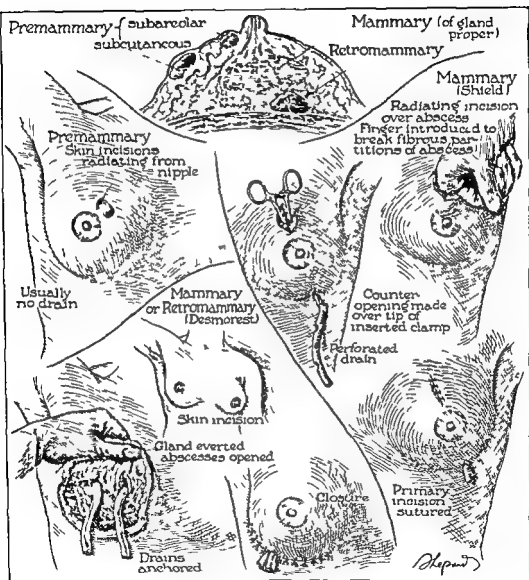
AN OPERATION FOR POSTOPERATIVE VENTRAL HERNIA (JUDD METHOD)



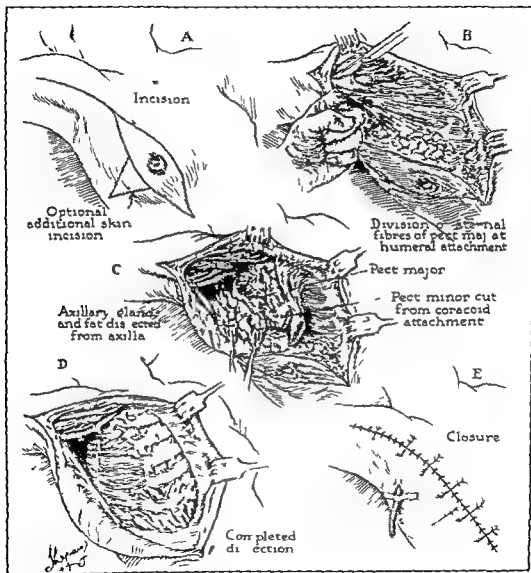
REPAIR OF FEMORAL HERNIA



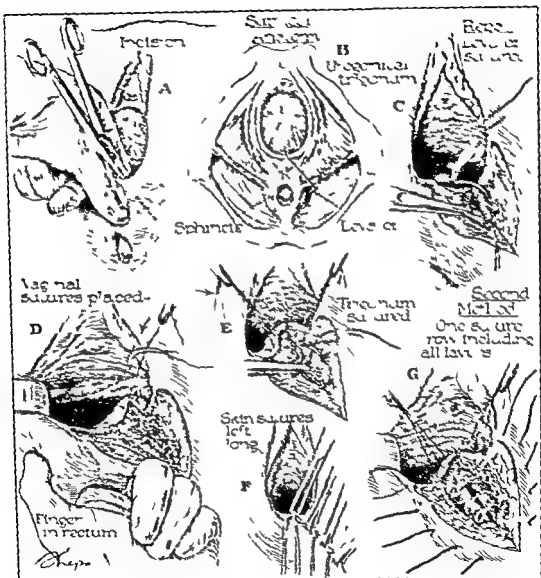
MAMMARY ABSCCESS



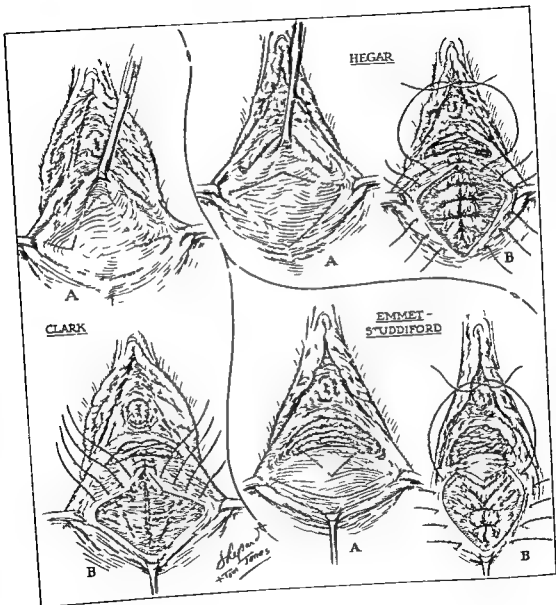
RADICAL AMPUTATION OF THE BREAST



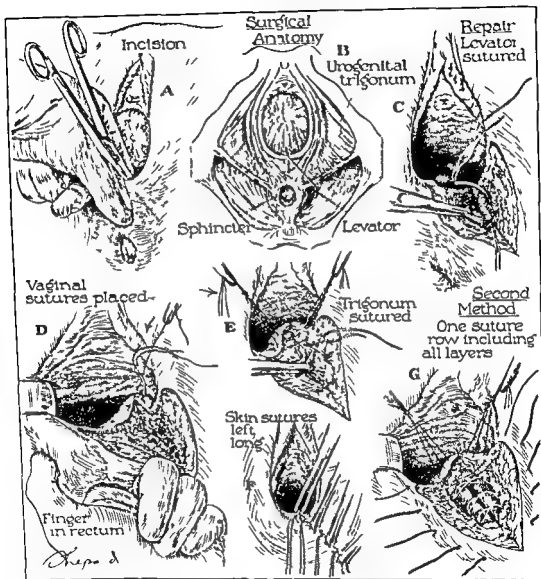
EPISIOTOMY



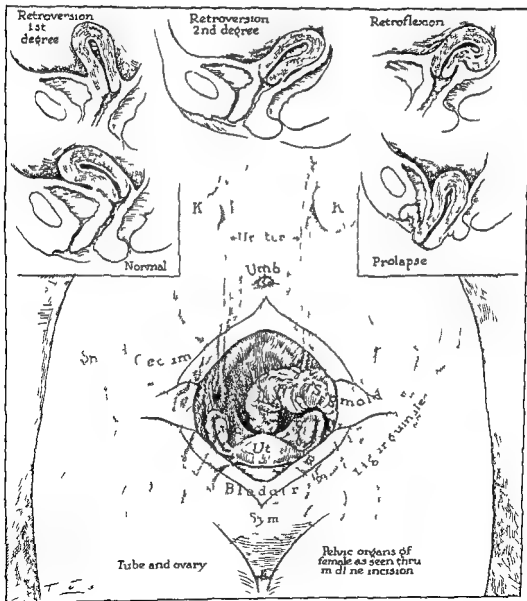
REPAIR OF PERINEUM



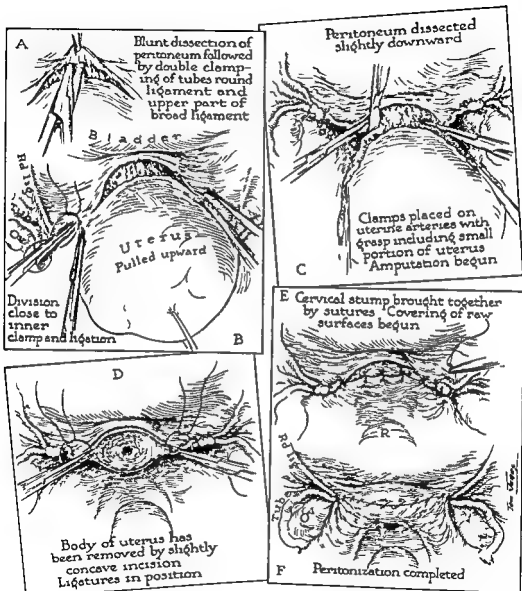
EPISIOTOMY



SURGICAL ANATOMY OF THE UTERUS

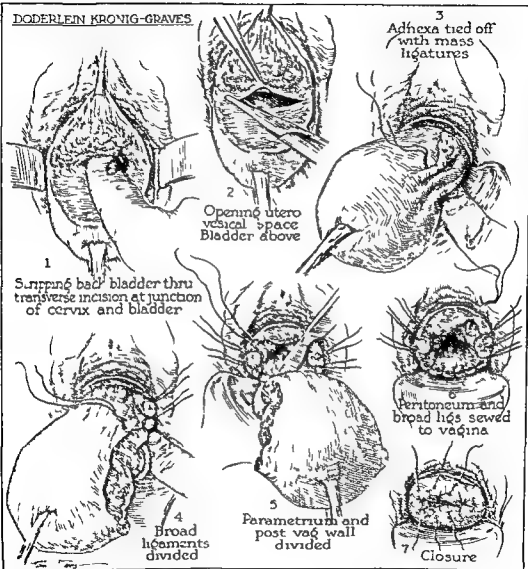


HYSTERECTOMY (CURTIS)



VAGINAL HYSTERECTOMY

DODERLEIN KRONIG-GRAVES



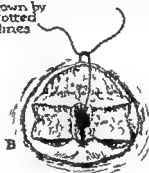
AMPUTATION OF THE CERVIX UTERI

CURTIS SCHROEDER



Cervix spl.
Portion
removed
shown by
dotted
lines

Raw surfaces
closed by deep
sutures

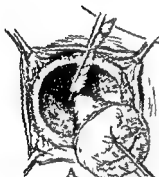


After Cure



Ant and post
lips united
to mucosa of
cervical canal

STURMDORF



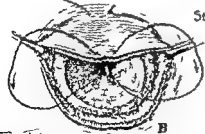
A
Vaginal cuff
elevated Cone
shaped portion excised



Sturmdorf
stitch



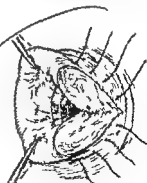
Closure



B

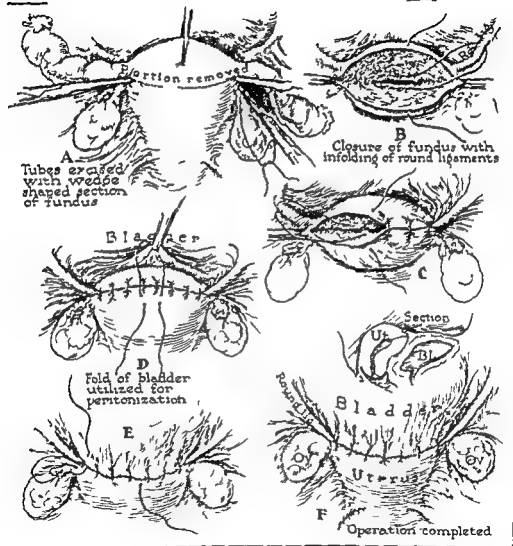
GRAVES
EMMET

Repair of
cervix

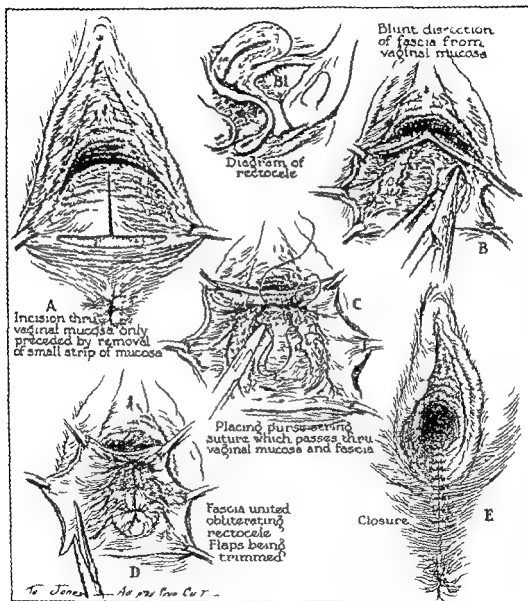


SALPINGECTOMY WITH DEFUNDECTOMY

FALLS



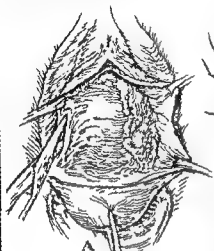
REPAIR OF RECTOCELE



REPAIR OF CYSTOCELE

ADVANCEMENT OPERATION

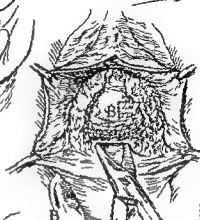
*Adapted from Cushing
to Jones*



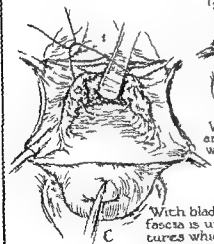
A
Fascia separated
from vaginal flaps



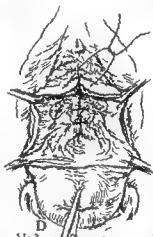
Diagram of
cystocele



B
Bladder freed
by blunt dissection



C
With bladder elevated
fascia is united by su-
tures which enter
uterus

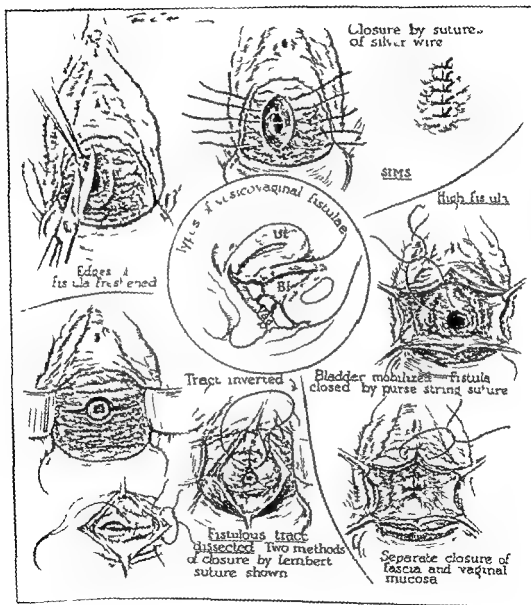


D
Vaginal flaps trimmed
and united by sutures
which grasp under-
lying fascia

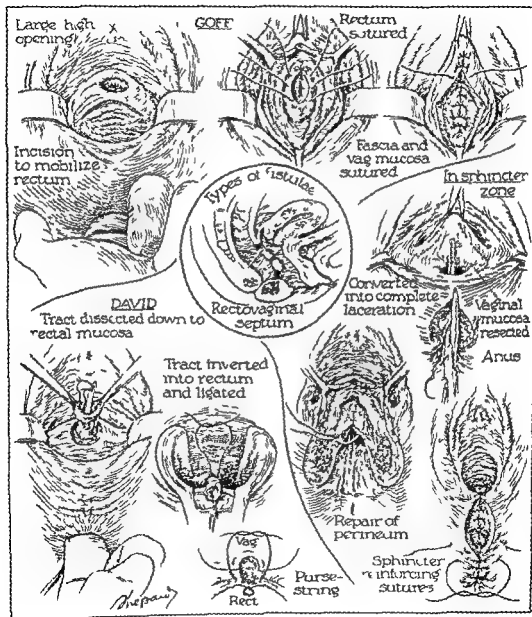


F
Closure

REPAIR OF VESICOVAGINAL FISTULA



RECTOVAGINAL FISTULA



ETHICON SUTURES

STRONG SUPPLE SMOOTH UNIFORM HEAT-STERILIZED



JOHNSON & JOHNSON began producing surgical sutures in 1887. Our experience of more than half a century has led us to the production of what thousands of surgeons in all parts of the world consider the most dependable catgut ever devised—Ethicon Non Boilable Catgut Sutures.

Our scientific staff includes the most capable men available who devote their entire time to experiment and control in our laboratories in the United States, England and Australia.

Absolute sterilization by heat without impairment of tensile strength is the daily production standard of Ethicon Non Boilable Catgut Sutures. As taken from the sterile tubes, they possess more tensile strength than is required to ligate the largest human blood vessel or to suture the densest human tissue.

Ethicon Non Boilable Catgut Sutures are produced by exclusive procedures from the raw material to the final stage of packaging and inspection in our laboratories. They are ~~supplied~~ smooth and uniform.

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